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NATIONAL PETROLEUM NEWS

NEW Refining Technology EDITION

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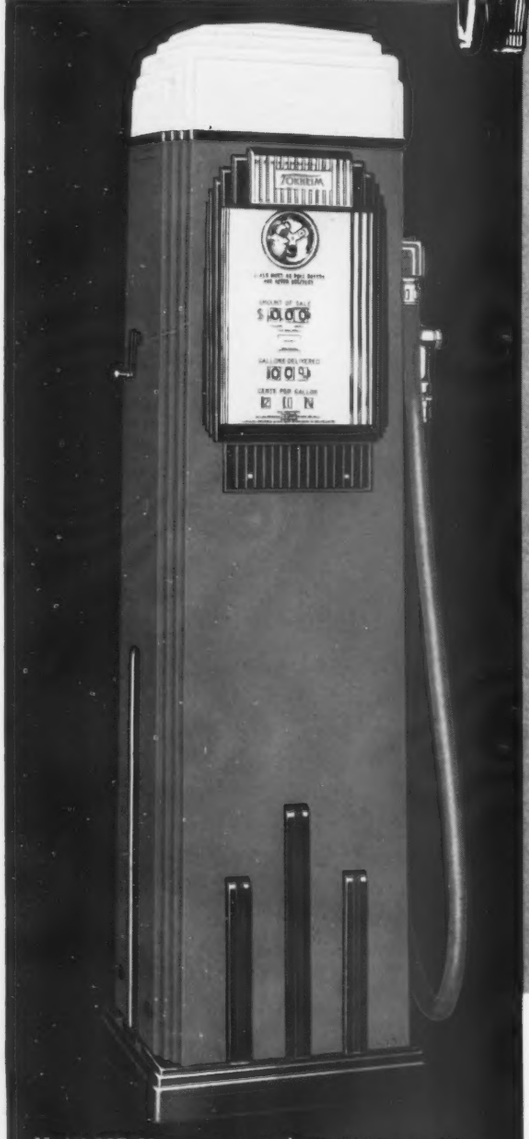

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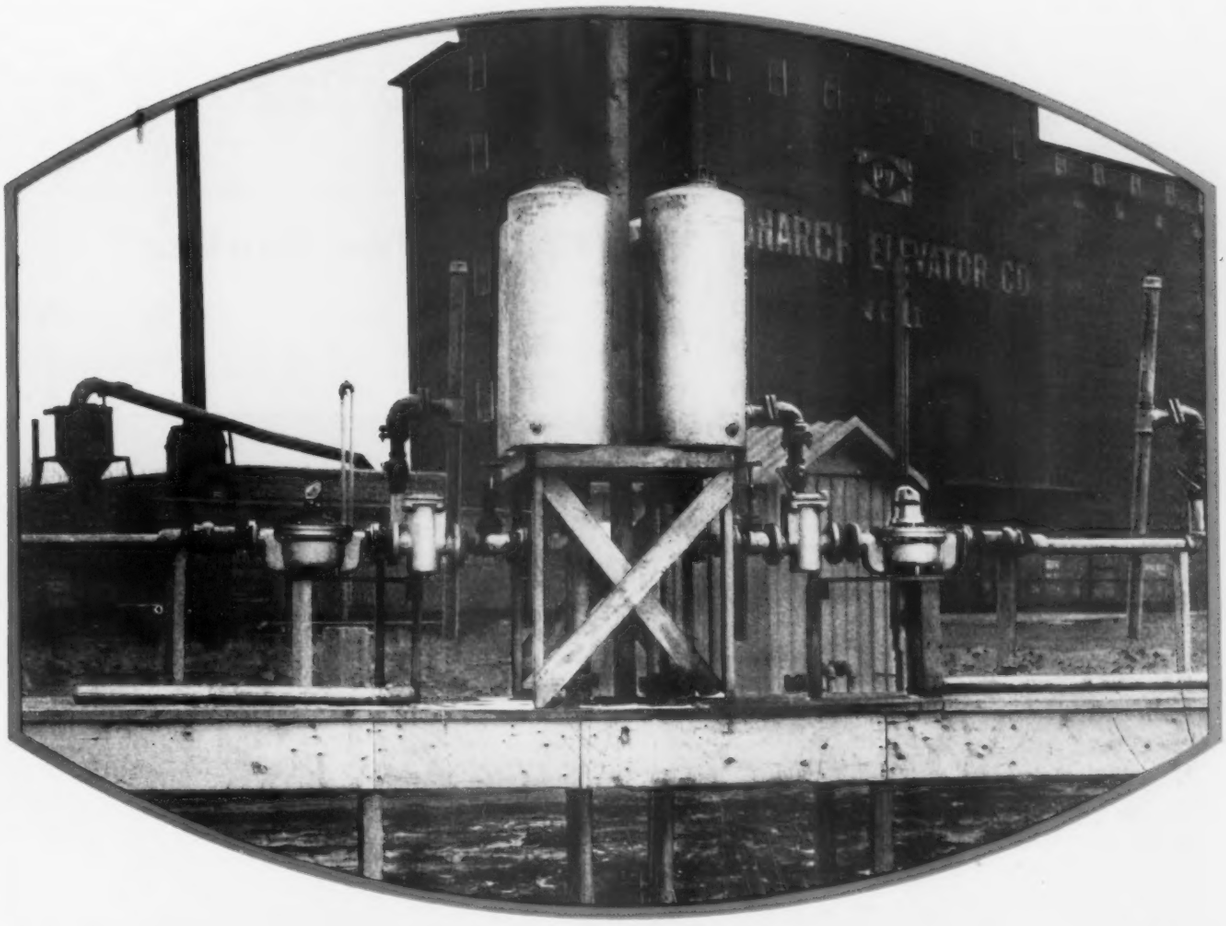

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Smiles Are For New 12,000-Ton Tanker

Mrs. Robert E. Quinn, wife of the governor, christened the new Texaco tanker, "Rhode Island", launched at the yards of the Sun Shipbuilding & Drydock Co., Chester, Pa. Others in the picture are John G. Pew, president of the shipbuilding company (left) and T. Rieber, chairman of the board of directors of The Texas Corp., owners of the new motor ship.

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LAST MINUTE
OIL NEWS SECTION

News By Teletype From 4 News Bureaus

National Petroleum News

News From Oil Industry Everywhere

VOLUME 29 | WEDNESDAY, NOVEMBER 3, 1937 | NUMBER 44

Rails Will Seek Another Advance In Freight Rates

N. P. N. News Bureau

WASHINGTON, Nov. 1. — Not content with the increases in rail freight rates granted by Interstate Commerce Commission late in October, the Assn. of American Railroads has made known that members will ask another horizontal 15 per cent increase in the level of all freight rates, except on coal and coke, lumber, fruits and vegetables, and sugar on which smaller increases will be asked.

This application, if granted, will add even more to the annual freight bill of the petroleum industry than the flat 1 cent per 100 pounds increase in current rates allowed by ICC in Ex Parte 115 (NPN, Oct. 27, p. 17). This increase will amount to an additional $8,000,000 in oil's annual freight bill.

No formal request for such an increase has been filed with ICC yet, but the association's member boards voted at a meeting in Chicago last week to make such a proposal, citing as the reason, "rising costs of operation over which they have no control."

In addition, the rails will ask increased passenger fares in all sections of the country.

"This action," according to J. J. Pelley, president of the AAR, "has been forced on the railroads because the margin between income and operating expenses has been squeezed so thin that they face a real crisis. Because there is no other way to meet this crisis than to make a general increase in rates and fares, the railroads will ask the commission to expedite consideration of this matter."

The increases granted late in October, which will raise the rail's annual revenue by $47,500,000, was characterized by Pelley as "an appreciated step in the right direction, but manifestly inadequate to meet the necessities of the situation as it has developed since the application in that case was filed last year."

MAJORS' BUYING IN E. TEXAS RELATED

Oilgram Reporter Then Called As Trial Enters Fifth Week

By Teletype
By A. M. PETTY
N. P. N. Staff Writer

MADISON, Nov. 2. — The oil "conspiracy" trial is in the midst of its fifth week with witnesses for the prosecution testifying about the buying of gasoline in East Texas by major companies.

Questioning of John Steiger, Tulsa, of *Platt's Oilgram*, reached "major company buying" late today shortly before the court recessed until Nov. 3. Earlier, Steiger had reiterated that inter-refinery sales were not considered in arriving at *Oilgram's* price quotations.

Defense Calls 13

Earlier in the day cross-examination of John M. Bradshaw, Dallas, of Hercules Oil Co. (broker), was completed. He testified that none of the more than 7000 cars purchased in East Texas for Gulf were above the "low" of *Platt's Oilgram*.

Statements in Bradshaw's telegrams to other brokers were brought out by government counsel, including one about independent refiners being unwilling to sell to independent brokers or jobbers at 4 cents when they could get 4.25 cents from major companies.

Meanwhile, subpoenas have been issued for the appearance of 13 defense witnesses — most of whom were connected with federal oil administration or Planning and Co-ordination Committee under the NIRA oil code.

Cline On Stand

During the past few days, government counsel have put into the record 50 or more letters and telegrams from oil company files and elsewhere. Several of these contained statements to the effect that major companies were participating in a "program" to buy up surplus gasoline in East Texas.

Neil Buckley, of Tulsa, Cities Service Export Oil Co., market observer who was "loaned" to the East Texas Refiners Marketing Assn., told about meetings in New York of certain major company officials where the question of buying surplus gasoline in East Texas was allegedly discussed. He insisted that nothing was decided.

Further details of the East Texas refiners' "selling organization" were related by Robert N. Cline, Tyler, Texas, secretary of the refiners' association. Cline explained that the association charged commissions on sales at the "going market price."

Government counsel tried to bring out from both Buckley and Cline that "going market price" meant the price quotation of *Platt's Oilgram*, East Texas market.

There were frequent battles between opposing counsel as government attorneys tried to "refresh" the witnesses' recollections with their testimony before the Madison grand jury. On one occasion, Judge Stone termed the grand jury questions "very, very leading" and declined to read them to the witness.

Meeting At New York

Opening the morning session Oct. 27, Government Attorney Lewin asked Buckley if he recalled a "plan" being presented at a meeting in New York on March 15, 1935, under which "the surplus gasoline in East Texas would be divided up among the major oil companies."

Judge Stone sustained Col. Donovan's objection to this question and directed the witness to "state in your own words what occurred."

"Mr. Arnott called the meeting to order," Buckley said. "He told them that I was there and that East Texas refiners were pressing me for some answer to their problem. He said he want-

(Continued on page 10)

Not A Fender Scratched In Mass Driving Of Standard of California Employes

N. P. N. News Bureau

LOS ANGELES, Oct. 30. — Standard Oil Co. of California tried out an experiment in safe driving on 16,000 of its employes who were expected to gather at Santa Cruz for the company's 1937 Frolic.

Approximately 12,000 would attend by automobile, some of the cars coming from as far as the Oregon and Utah state lines. In all it was expected that about 2,000,000 highway miles would be covered by the motoring cavalcade.

Faced with the possibility that accidents might attend a mass movement of this proportion, the company sent out a bulletin to all employes expecting to make the trip, challenging them to drive safely. The challenge read:

"One of our directors (P. H. Patchin) has said to your committee chairman:

"'Do you suppose that it is possible that those of the 15,000 or 16,000 people who will visit Santa Cruz next Saturday, and go by automobile, can get there and back without an accident?'

"'Sure', said the chairman, 'if we can get every driver to make up his mind to it.'

"What a wonderful thing this would be! It would show the world that thousands of Standard Oil employes can collectively drive tens-of-thousands of miles and not have an accident. It is something that the newspapers would comment about.

"So let's try it out! No accidents to or from Santa Cruz! Drive carefully, give the other fellow a break and take no chances."

The result was nary a scratch

(Continued on page 24)

Letters On Buying Are Read In Court

ed suggestions as to how the situation could be handled.

"Someone arose with a slip of paper in his hand and stated that it had been suggested that some 12 to 15 of the larger companies consent to absorbing a certain percentage of the surplus gasoline in East Texas and that each company take so much gasoline, the amounts being read off as to what each company would take," Buckley continued.

During the discussion which followed, he said, it was stated that several of the companies not represented had said they would not buy any East Texas gasoline or participate in any "program for the buying of East Texas gasoline."

"No Authority"

When the company representatives present were polled, Buckley added, most of them stated they had no authority to discuss the subject without going back to officers of their respective companies.

"No decision was reached as to who would buy gasoline, or how much they would buy, or whether they would buy at all," the witness testified, adding that he was "discouraged".

Those at the March 15 meeting, held at the Waldorf Hotel, according to Buckley, were Arnott, Carnes of Sinclair, Hartmann of Gulf, O. D. Robinson of Republic, Gould of Shell-Eastern, and some representative of Continental.

Lewin pressed him about Noel Robinson of Tide Water, but Buckley said he couldn't place him at the meeting.

Going back to East Texas, Buckley said he reported to a group of independent refiners meeting at the home of Judge Starnes, near Gladewater, that he was "disappointed" at results of his trip East; that many major companies had refused to recognize or buy through the East Texas marketing association.

Lewin brought out that, while "loaned" to the East Texas association, Buckley's salary was paid by Cities Service Export Oil Co.

Attitude On Price

Buckley said his main activities for the association consisted of trying to get buyers back into East Texas and interceding with the buying companies on behalf of the independent refiners, such as getting the buyers to use the sellers' tank cars and straightening out controversies over quality of the gasoline purchased.

Asked what his attitude was on price, Buckley said he asked the major companies to buy at "a fair going market price."

"Did you ask them to support the market," Lewin repeated.

"I asked them to support the refiners, if that means supporting the market," Buckley replied.

Apparently dissatisfied with the witness' answer, Lewin handed up to Judge Stone the grand jury transcript.

"I object to this running up to the bench all the time with the grand jury testimony—it leaves a bad impression in the jury's mind," declared W. H. Dougherty, local attorney for Gulf. "Results so far have not been very significant."

Government Attorney Chaffetz denied that the results had been "insignificant". He pointed out that the government is "compelled" to call witnesses who are major company employes.

"Witnesses Under Pressure"

"Everybody knows," Chaffetz declared emphatically, "that these men are under pressure from their employers——"

Donovan was on his feet immediately, objecting that this was "highly improper and intended to be inflammatory." He started to say something about the "pressure" coming from the government, when Judge Stone interrupted.

"The jury will disregard that statement, 'the witnesses are under pressure'," Judge Stone directed. "These witnesses have testified before the grand jury. Some of their testimony I have refused to read because the questions were very, very, leading. I have used some of it only for the purpose of refreshing the witnesses' memories. Many times I have indicated that there was no conflict or inconsistency between their testimony here and the grand jury transcript."

Lewin then asked the court to tell the jury "whether in your opinion my conduct in coming to you with this grand jury testimony was improper."

"There was nothing improper," the judge replied.

Counsel Clash Again

Opposing counsel clashed again a few minutes later when Lewin asked Buckley if the major companies listed in the indictment were the ones he "approached and solicited". Defense counsel contended that it was "repetition" but the government attorney said he wanted from the witness a list of companies and people he had approached.

"And we can't get it," Lewin insisted.

"You could get it if you asked him," Judge Stone replied. "This witness is trying to do the best he can. I don't want any aspersions cast on any of these witnesses—too many side remarks like that are getting into the record."

Lewin handed the witness a copy of the indictment and he then gave the substance of conversations he said he had with a number of the defendant oil company officials. With some officials Buckley had discussed buying from East Texas refiners, while with others he had also talked about amounts purchased, according to his testimony.

The government attorney tried to wring from Buckley the statement that he had told major companies that buying in East Texas would help them by raising prices and had used this as an "argument" to get them to buy.

But Buckley insisted that he had said it would "benefit the whole industry" if East Texas refiners "survived on an orderly basis."

Denies Fixing Price

"I never fixed a price—prices are determined by supply and demand. It was up to the refiners themselves to set their prices," Buckley added a moment later.

"But demand affects prices," Lewin came back and Buckley agreed.

Buckley testified that the East Texas marketing association collected commissions on sales at the "going market price". Lewin tried to bring out that the price paid by the major companies was the "prevailing price" and was the same as the quotation in *Platt's Oilgram*.

Next, Lewin read several of Buckley's letters and questioned him about them. Buckley explained a statement about buying 600 cars "which we didn't need" by saying that it was an "untruth" used in dickering with a refiner who allegedly was trying to back out of a deal. In reality, he added, the 600 cars were needed to make up a cargo.

Asked what he meant by another statement about the possibility of crude runs increasing to a point where "it would make the handling of surplus gasoline difficult", Buckley said he meant "handling" by the marketing association.

Another letter, dated April 27, 1935, from Buckley to H. E. Brandli, New York, Cities Service Export Oil Co., mentioned "reports coming to us from the East indicate that those companies who have benefited by the strengthening of the markets are well satisfied with their purchasing ventures and will continue their interest in the problem."

Opening the afternoon session Oct. 27, Lewin briefly questioned Buckley about contacting major company buyers and operations of the East Texas asso-

Defense Counsel Issues Names Of First Witnesses

N. P. N. News Bureau

MADISON, Nov. 1.—Names of the 13 witnesses to be called by oil company defense counsel—the first made public so far—include two independent refiners, a broker, and ten men formerly connected with the federal oil administration or the Planning and Co-ordination Committee at Washington during NRA days.

Subpoenas have been issued, it was announced, for appearance of the following:

E. B. Swanson and Dr. John W. Frey, former members of the Petroleum Administrative Board and now associate directors of the Petroleum Conservation Division of the Interior Department.

Rex H. Winget, Cushing, Okla., of Cushing Refining and Gasoline Co.

Carl O. Beroth, Chicago, president of Acme Petroleum Co. (a broker who testified as a government witness early in the trial).

Irwin E. Lamp, Chicago, of Pure Oil Co., former secretary of the P. and C. Committee and now custodian of its records.

Charles Fahy, Washington, former chairman of the P. A. B. and now general counsel for the National Labor Relations Board.

George R. Hopkins and A. H. Breakey, Washington, economists with the petroleum economics division of the U. S. Bureau of Mines.

John E. Shatford, El Dorado, Ark., of Ouachita Valley Refining Co., former member of the P. and C. Committee and national co-ordinator of refining.

J. D. Collett, Fort Worth, of O'Keefe & Collett, independent producers and president of Mid-Continent Oil & Gas Assn., former chairman of the P. and C. Committee.

Wirt Franklin, Ardmore, Okla., independent producer, former chairman of the P. and C. Committee.

Roy B. Jones, Wichita Falls, Texas, Panhandle Refining Co.

Buckley's Cross-Examination Is Brief

ciation, then turned back to reading letters and telegrams.

One letter, dated May 17, 1935, and starting with the words "for your confidential information," said it was reported that approximately 400,000 barrels of gasoline had been purchased in East Texas by "major refiner purchasers during the period in which the East Texas Refiners Marketing Assn. has been in operation."

"The accumulation of this quantity of material, which otherwise would have been distress," the letter continued, "is in a considerable measure responsible for the difference between the price of 3.125 cents early in February and the low price of 4.5 cents f.o.b. which today prevails."

Another letter (Oct. 12, 1935) stated that purchase in East Texas of approximately 200 cars by Sinclair "cleaned up all surplus straight-run gasoline in that field for a period extending to Oct. 21 or 22."

Curtailment of Runs

Questioned about what he had said to East Texas refiners, at the first anniversary dinner (January, 1936) of the marketing association, about "curtailment," denied that he had made any "recommendation".

"I told them that they had several choices—shut down and sell their crude; sell part of their crude and make the rest into gasoline; make it all into gasoline and store part of it; or dump all the gasoline on the market and take what price they could get," Buckley explained.

Lewin next read to the jury an itemized list of Buckley's long distance telephone calls for which he billed the East Texas association, totaling $141.45 for January, 1936. Included in the list read were calls to Hartmann, Carnes, Bradshaw, Tracey, Arnott, and others.

The government attorney closed his examination of Buckley by reading from a telegram to Harry Frueauff, New York, of Cities Service from C. E. Arnott at New Orleans, dated Jan. 29, 1936. It stated that the East Texas situation needed "prompt handling", adding, "what we need is your order for 50 cars."

Cross-examination of Buckley was brief; so brief it "surprised" government counsel who were not prepared with their next witness, so a recess was called. But there was almost a continual battle as government attorneys fought every attempt to link up Arnott to the oil code administration at Washington.

Donovan opened with questions about Buckley's buying for Cities Service Export Oil Co., producing a chart which he said compared the purchase prices paid with the range of price quotations in *Platt's Oilgram*, East Texas market.

Buckley said he made 35 purchases in 1935 and that 34 were at prices below the "low" of the *Oilgram* and one purchase of 375 end point at the "low" for U. S. Motor.

Remove "Hot" Oil Stigma

The witness explained again that East Texas refiners, in setting up the marketing association, had declared their intention to remove "the stigma of 'hot' oil", co-operate with state authorities, live up refinery quotas from the "federal allocation board", and secure enactment of the Connally Law so that the tender board system could be re-established in East Texas.

Government counsel objected that no mention had been made of "federal allocation board" on direct examination. Donovan quoted from letters read wherein the phrase was used.

Buckley then explained, at Donovan's request that he understood the "federal allocation board" at Washington set gasoline manufacturing quotas for the various refining districts. On objection from government counsel, Judge Stone ordered stricken a part of Buckley's answer about refiners being "obligated under the code" to live up to their allocations.

"Collett and Lederer"

When the witness was asked to identify "Collett and Lederer", Donovan met the objections by quoting from a telegram read by Lewin in which these names were mentioned.

Buckley identified them as Dr. E. R. Lederer, refining allocator for East Texas and a member of the petroleum labor board, and as "Jim" Collett, Fort Worth, chairman of the P. and C. Committee under the code.

But the real battle occurred as Donovan sought to bring out Arnott's "other position." Government counsel by this time were objecting vigorously to nearly every question asked.

"Was Arnott an official of the government?" Donovan asked. Almost before the words were cut of defense counsel's mouth, Chaffetz was objecting. "Counsel well knows that he was not a government officer," the government attorney declared heatedly.

Donovan contended that the prosecution had pictured Arnott only as an officer of Socony-Vacuum Oil Co. and carefully shut out any reference to his "other position", during examination of Buckley. He insisted on his "right" to give the "other side of the picture."

"Chief Stabilizer"

The argument grew livelier as government counsel battled to block each new avenue that Donovan tried. Before the session was over, however, Arnott was identified as "chief stabilizer under the code" and "stabilizing agent under Secretary Ickes".

Chaffetz insisted there was no such office under the code.

Over objections, Buckley identified "Captain Stanley" mentioned in one of the letters as "head of the state tender board in East Texas under the Texas Railroad Commission."

Donovan ended his cross-examination with dramatic suddenness after Judge Stone sustained objections to a question about jurisdiction of the Texas Railroad Commission.

Government Attorney Crawford said that the prosecution was "surprised" and had no other witness on hand, so called for a recess.

30 Letters Read

Opening up Oct. 28, government counsel devoted more than two hours to reading more than 30 letters, telegrams and interoffice memoranda, said to have been obtained from oil company files.

One was a telegram, signed C. E. Arnott, about calling a meeting March 6 (1935) at the Waldorf Hotel in New York of "small group of major companies to hear outcome by meeting with East Texas refiners and to consider future action surplus gasoline this and other groups. . ."

Most of the documents in the nature of weekly market letters from J. W. Warner, Tulsa, of Tide Water, to J. D. Collins, New York, of Tide Water.

Oil company attorneys fought the introduction of these letters, contending that they were the "rankest kind of hearsay" and nothing but some gossip or rumors floating around in East Texas and other fields mentioned.

Judge Stone ruled that "for the present" the letters would be admitted only as against Warner, who is a defendant.

One letter said "the major company buying movement coupled with the allocation of refinery crude runs is considered largely responsible for the improvement in the refinery gasoline market the last several weeks."

Another letter dated June 8,

(*Continued on page* 20)

Gasoline Prices Are Reduced At Several Points

N. P. N. News Bureau

CLEVELAND, Nov. 2.—Tank car, tank wagon and retail prices of all grades of gasoline declined from one-eighth to one cent per gallon, in one part of the country or another, as four major companies announced changes and lower prices were reported on four spot markets.

Standard Oil Co. of Ohio the past week announced two reductions of one-eighth of a cent per gallon each in the tank car prices of gasoline; placed tank car kerosine shipments in 10 counties of northwestern Ohio on the Michigan market basis, rather than on Pennsylvania prices; reduced tank wagon and retail prices of all grades of gasoline throughout its territory and cut prices on various solvents and naphthas.

Standard of Ohio on Oct. 20 had abolished the commercial consumer gasoline tank wagon price, generally 1.5 cents below consumer tank wagon, and placed all sales to commercial buyers on the full consumer tank wagon price. Exceptions were made in 12 counties. Concomitant with this change, the company revived the Q. D. A. policy which consists of a schedule of discounts deductible from the consumer tank wagon in accordance with quantity purchased.

Other Markets Cut Gasoline

Other marketing companies which announced price changes the past week included Atlantic Refining Co., which cut tank wagon and commercial tank car gasoline prices one cent through 8 counties, in whole or in part, and at Wilmington, Del. Sun Oil Co. and a number of other companies made similar changes Oct. 22, three days previously. Atlantic's new tank car price is 7.5 cents, and split dealer tank wagon, 8.5 cents, exclusive of taxes for regular grade of gasoline.

Effective Nov. 3, Standard Oil Co. of Indiana announced a reduction of three-tenths of a cent per gallon in dealer and consumer tank wagon prices of all grades of gasoline in normal (full price) areas of ten states.

Standard of Indiana also placed gasoline sold at normal prices in the lower Michigan peninsula on the basis of shipments from River Rouge (Detroit). This method of basing places Michigan normal prices on a lower schedule than the

(*Continued on page* 23)

API 18th Meet Opens Next Week With 70 Sessions

N. P. N. News Bureau

For the eighteenth time oil industry leaders will gather next week for the annual meeting of the American Petroleum Institute, again in Chicago's Hotel Stevens.

While the meeting covers Nov. 8 to 12, the first two days are for committee meetings and the formal program starts Nov. 10 for general sessions and group meetings in production, refining and automotive transportation.

Election day for important cities will be over this week but the institute will hold its election activities Nov. 10. Terms of 51 directors, elected in 1935, expire. The board of councillors meeting Wednesday morning will make nominations. Election will be at the general session that afternoon.

Outside Speakers

Three speakers from outside the industry are on this year's program. Then there will be the annual president's address by Axtell J. Byles, and numerous papers by outstanding oil men.

First of the three outside speakers will be on the general session program Nov. 10. Dr. H. E. Howe, editor of Industrial and Engineering Chemistry, will speak on "The Significance of Petroleum Research—Its Value to the Public, Its Necessity to the Industry."

The other outside speakers will be on the general session program Nov. 11. They are:

Congressman Wesley Disney, Oklahoma, author of the bill bearing his name to restrict oil imports and double oil import duties.

Charles F. Kettering, director of research and vice-president of General Motors Corp., who will be the final speaker for the session.

60 Committee Meetings

The annual dinner will be Nov. 11. Besides the three addresses by outside speakers, and the president's address, there will be over 60 committee meetings and seven group meetings.

The advisory committee on public relations meets Nov. 9 at 8 p. m. to prepare a more ambitious program than originally planned. President Byles will talk on the industry's relations with the rural press. Gen. Baird H. Markham, American Petroleum Industries Committee, will talk on accomplishments and public relations activities of his committee. Thomas H. Taylor, president of the Petroleum Industry Exhibition for New York's world's fair in 1939, will speak.

New Orleans—Buffalo By Inland Waters

ST. LOUIS, Nov. 1.—In an attempt to establish a new all-water route for towing petroleum products from New Orleans to Buffalo by way of the Mississippi river, Illinois waterway, and Great Lakes, 14 barges of fuel oil were stranded for almost a week at Laconia, Ark.

The barges, containing 60,000 barrels of oil were towed as far as Cairo by the Federal Barge Line. The two tugs which were towing the barges were said by rivermen not to have enough power to properly handle the tow. The $100,000 cargo was the property of Petroleum Heat and Power Co., New York.

Two More Join In Weight Case

N. P. N. News Bureau

WASHINGTON, Nov. 1. — Two more intervenors were admitted during the past week to two of the four complaints against the 6.6 pounds per gallon weight estimate which railroads use for freight charges on gasoline and other petroleum products.

Arkansas Fuel Oil Co. was given leave to intervene in the case brought by Anderson-Prichard Oil Corp., and associates, after citing in its petition only that it was "interested" in the outcome of the proceedings.

Standard Oil Co. of Indiana, which had formerly been granted permission to intervene in the other 6.6 cases, filed a similar petition in the case filed by Illinois Petroleum Marketers' Assn., asking that the ICC give it the same relief and remedy as it did the complainants, should ICC find the rates, weights, charges and regulations unlawful.

TULSA, Oct. 30. — The important wildcat of Standard Oil Co. of Louisiana, which opened a new deep pay zone in Permian lime in Columbia county, Ark., flowed 397 barrels in 24 hours through open tubing on its first full test after being deepened to 7214 feet. Location is in 8-16-22, near Stamps.

Nine-Months Net Twice '36 Figure

N. P. N. News Bureau

TULSA, Nov. 1.—For nine months ended Sept. 30, the Panhandle Producing & Refining Co. and subsidiary companies reported net income of $227,886.72, more than double the net income for the same nine months in 1936, which was $105,131.54.

Gross income for the company for the nine-months period was $3,059,256.11, as compared with $2,473,726.87 for the same period in 1936. Operating expenses were $2,517,299.11, as compared with $2,061,704.23 last year, making net income from sales $541,957 for the nine months ended Sept. 30 this year, as compared with $412,022.64 last year. Operating income before depreciation and depletion was $383,324.01, as compared with $281,707.04 last year and net operating income was $256,315.39, as compared with $130,410.03 for nine months of last year.

Total assets as of Sept. 30 were $2,712,174.44 and the nine months operations this year resulted in a reduction in the company's surplus account from $1,320,380.34 as of Jan. 1, 1937, to $1,090,612.14 as of Sept. 30.

The company's inventory account on Sept. 30 stood at $421,436.44, made up as follows: crude oil $24,281.46, refined products $164,173.38, merchandise at stations $90,145.30, raw material $80,351.64, work in process $10,421.24, material and supplies $52,063.42.

ICC Will Probe Rates Of Eastern Truckers

N. P. N. News Bureau

WASHINGTON, Nov. 1. — A threatened rate war among common carrier truckers along the Middle Atlantic seaboard has resulted in announcement of a general investigation by the Interstate Commerce Commission of tariffs filed by these truckers, chiefly those operating between New York, Philadelphia, Baltimore and Washington, and contiguous territories.

Hearings in this investigation will open before division 5 of the ICC here Nov. 10.

Since the probe embraces "all common carriers" of all commodities in the area, its scope will include numerous common carriers of petroleum and products from seaboard terminals and refineries.

The investigation has grown out of a controversy between the Middle Atlantic States Motor Carrier Conference, Inc., and Freight Forwarders, Inc., over a higher scale of rates recently proposed by the conference. It is expected to result in a determination of uniform rate schedules for the region.

Freight Forwarders, which withdrew from the conference when the new scale was filed, holds that only by lower rates can truckers hope to increase revenues through attracting traffic from the rails. The Forwarders, after withdrawal, joined lower-tariffs already filed by other agents, and have been branded "cut rate operators" by the conference.

Unfair Acts Prosecution Again Sought By FTC

WASHINGTON, Nov. 1. — Recommendation that legislation be passed giving the Federal Trade Commission authority to prosecute "unfair or deceptive acts and practices" as well as "unfair methods of competition" is in the annual report of the commission made public today.

It is a renewal of the recommendation carried in last year's annual FTC report. Under the present authority of the commission, "unfair competition" must be shown. The proposed amendments would declare unlawful unfair acts whether they harm a competitor or not.

The commission also recommended amendments to the FTC act which would make its orders final where respondents do not apply for a court review within 60 days.

Mentioned briefly is the fact that the proposed fair trade practice rules for the gasoline pump manufacturing industry, hearings were held last February, are still "pending."

The report contains no mention of the proposed rules for the petroleum industry, recently disapproved by FTC.

Kentucky Men Choose Dates

LOUISVILLE, Nov. 1.—The 12th annual meeting and trade exhibit of the Kentucky Petroleum Marketers Assn. will be held at the Brown hotel, Louisville, Feb. 7, 8 and 9, according to Richard Gordon, Three Rivers Oil Corp., president.

There will be a speaking program, a trade exhibit and one day will be designated as Kentucky Petroleum Industries Committee day. At that time, a state official is expected to speak. The first day will be devoted to divisional and committee meeetings.

Heating Has Been Fuel Oil's Best Customer Since 1934

N. P. N. News Bureau

CLEVELAND, Nov. 1.—Fuel oil for heating buildings last year, for the second consecutive year, surpassed demand of oil for bunkering ships, the most important fuel oil market prior to 1935, so reports the petroleum economics division of the Bureau of Mines.

Sale of heating oil last year was 99,257,000 barrels, or 29 per cent above the 76,853,000 barrels in 1935. Range oil sales also increased, the 27,292,000 barrels in 1936 being 27 per cent higher than in 1935.

Intensive oil burner sales campaigns and the important gain in residential construction led economists to anticipate a gain in 1936 heating oil sales. Yet, the figures probably are several millions barrels off, through inability of reporting oil companies to segregate completely exact quantities for heating purposes, as light oils can be used for domestic oil burners, diesel engines, tractors or industrial purposes.

An attempt for the first time, in the 1936 report, to tabulate light and heavy heating oils sales showed, for that year, sales of Grades 1 to 4 were 69,429,000 barrels in volume, or 69.9 per cent of total heating oil sales. Grades 5 and 6 showed 29,828,000 barrels for heating purposes, or 30.1 per cent of the 1936 total.

The middle Atlantic states, New York through the District of Columbia, constitutes the greatest heating oil market, the report shows. This area accounted for about 39,000,000 barrels, or 39.3 per cent of total 1936 heating oil sales.

The north central territory, Tennessee up to Indiana and Michigan and west to the Dakotas and Nebraska, was second with 27,015,000 barrels sold in 1936, or 27.2 per cent of the nation's total.

New England states ranked third with 17,506,000 barrels. The south central area for the first time ranked fourth, displacing the Pacific coast area.

Range oil sales are reported separately to the Bureau of Mines as the product is not generally considered a fuel oil fraction.

New England states last year retained the title of champion range oil consumers, but at a slipping rate of the nation's total as sales in other areas climbed. New England's share of the national range oil market in 1934 was 62.9 per cent; in 1935, 58.2 per cent; and in 1936, 53.1 per cent.

Accompanying tables show sales in leading fuel oil and range oil consuming states.

To Deliver Towboat and Barges

CLEVELAND, Nov. 2.—To Pan-American Petroleum and Transport Co., Texas City, will be delivered, Dec. 1, one all-welded towboat and four oil barges by the Levingston Shipbuilding Co., Orange, Texas. The towboat, 65 feet long, will be powered with a 380 h.p. engine. Barges are 173 feet by 39 feet by 8 feet six inches.

States Where Sales Were One Per Cent or More of Total Range Oil Consumed in 1936

(In thousands of barrels, 42 gallons)

State	1934	1935	1936	% Total for 1936
Massachusetts	5,654	7,203	8,219	30.1
New York	2,691	3,222	4,811	17.6
Connecticut	1,653	2,223	2,511	9.2
New Jersey	979	1,200	2,210	8.1
Rhode Island	1,161	1,354	1,744	6.4
Maine	677	800	981	3.6
New Hampshire	489	561	639	2.3
Illinois	75	305	595	2.2
Pennsylvania	167	299	538	2.0
California	398	426	427	1.6
Vermont	278	389	411	1.5
Maryland	25	394	357	1.3
Missouri	44	232	269	1.0
North Carolina	8	238	268	1.0

Eleven States Where Sales Were 3 Per Cent or More of Heating Oil Consumed in 1936

(In thousands of barrels, 42 gallons)

State	1934	1935	1936	% Total for 1936
New York	12,136	16,213	20,665	20.8
Illinois	7,348	8,324	11,505	11.6
Massachusetts	5,735	7,760	9,429	9.5
New Jersey	4,914	6,192	8,710	8.8
Pennsylvania	4,533	5,354	6,420	6.5
Missouri	2,777	3,509	4,527	4.6
Connecticut	2,309	3,029	4,049	4.1
California	2,439	3,566	3,589	3.6
Minnesota	2,002	2,497	3,439	3.5
Michigan	1,769	2,384	3,223	3.3
Wisconsin	1,776	2,227	3,117	3.1

Sept. Exports Increase

WASHINGTON, Nov. 1.—United States exports of petroleum products in September had a total value of $37,081,000, compared with $23,757,000 in September 1936, according to the Bureau of Foreign and Domestic Commerce. U. S. imports of petroleum and products amounted to $3,551,000 in September, compared with $3,581,000 in the same month last year.

Argument Set for Nov. 2 On Pipeline Valuation

WASHINGTON, Nov. 1. — Nov. 23 has been set by the Interstate Commerce Commission for oral argument before division 1 of ICC on the tentative valuation placed on pipeline properties of Gulf Pipe Line Co. by the commission's valuation bureau.

The bureau valued carrier-owned-and-used properties of the company at $33,750,000; owned but used for purposes other than common-carrier, $250,000; and owned but not used, $380,556.

Hearings were held before an ICC examiner on Gulf's protest against the tentative valuation, made under ICC valuation orders of late 1934, in June this year. At that time Gulf contended that the tentative valuation had unlawfully excluded cash working capital, as well as certain lands and storage facilities necessary to its business as common carrier. (NPN, June 9, p. 15).

Highway Laboratory Tested Motor Fuels

PHILADELPHIA, Nov. 1. — The Research and Development Department of The Atlantic Refining Co. operated a highway laboratory during the summer near Lewistown, Pa., for the purpose of testing the anti-knock qualities of motor fuels.

Ten cars, representing the major portion of those in general use, were driven over a measured course under conditions ranging from mild to the most severe encountered in city and cross country driving. Each car carried a driver and a trained observer who noted the performance of the gasolines under test. Test fuels were matched against reference fuels standardized in the research laboratory, thus providing a comprehensive road rating of each fuel in terms of octane numbers.

A total of 112 fuels, representing a wide variety of crudes and methods of refining, were tested during the experimental period. Approximately 1500 octane ratings were made.

Colonial-Beacon Builds Terminal

By Teletype
N. P. N. News Bureau

NEW YORK, Nov. 2.—Colonial Beacon Oil Co. is constructing a 11,500,000 gallon ocean terminal at Ligonia, Maine near Portland for distribution in Maine and parts of New Hampshire, the company announced today.

The company plans to move there from its present quarters in East Deering Maine, when construction is completed next spring.

The plant will include a 20-car side track, four-truck loading rack, three-truck garage, office, storeroom for case oil and a warehouse. Facilities will provide for unloading of ocean-going tankers which will bring products from refineries at Everett, Mass., and Bayonne, N. J.

Tankage will include three spheroid tanks—two, 59,000 and one 6,000 gallon capacity—specially designed for gasoline storage; two 80,000 barrel standard tanks and two 3,000 barrel vertical tanks.

Accountants' Officers

TULSA, Oct. 30. — Newly elected officers of the Petroleum Accountants Society of Tulsa were in charge of the second meeting of the 1937-1938 year the night of Oct. 29. President is J. M. Flaherty, Shell Petroleum Corp.; first vice-president is R. L. Rush, Sinclair Prairie Oil Co.; second vice-president J. C. Fervoy, Skelly Oil Co. and secretary-treasurer M. H. Massey, Stanolind Oil & Gas Co.

The society was organized in 1928 to "develop, improve and extend and, so far as possible, standardize petroleum accounting."

Refiners to Discuss Heat Control

TULSA, Nov. 1. — The monthly technical meeting of the Ark.-La.-Tex. division of the Western Petroleum Refiners Assn., in Shreveport, La., Nov. 5, will be a discussion of heat and its control.

The program is in two parts. The first will be a talking motion picture, "Heat and Its Control", produced by the Johns-Manville Co. Following the picture R. C. Parlett, Johns-Manville Co., will discuss "The Control of Heat Through Proper Insulation."

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Gasoline Built The College Stadiums

By WARREN C. PLATT, Editor

MADISON, Wis., Oct. 31.—Would there be these spectacularly attended football games if it were not for the automobiles and the gasoline necessary to run them?

We, of the oil and automobile industries, have ascribed many of mankind's luxuries and pleasures, as well as his added necessities, to the motor car but I do not recall hearing that the automobile has made possible these enormous stadiums and the big events staged within them.

Yesterday a good football game was played in this capitol city with its blue lakes. Northwestern University came up from Chicago and met the University of Wisconsin. Nearly 30,000 people turned out. The streets for a half mile and more around the stadium were blocked with parked cars. Many walked from cars parked somewhere in town.

Madison has almost 60,000 inhabitants, men, women and children. Obviously half the town did not turn out for the game. That attendance came from a good bit of Wisconsin and from Illinois and from west of the river. It came by automobile—by gasoline. No other means of transportation could bring such a crowd to a small city in any degree of comfort.

Back in the allegedly good old horse and buggy days, if all these people had wanted to attend such a game they would had to take a couple of weeks at least to coming and going. Some would have needed a month.

Railroad transportation of such large numbers to a central point such as Madison, would have been inadequate for so big a crowd because the ordinary rail facilities could not have handled the hundred or more trains necessary. Furthermore, that number of people would have found it difficult to get to the stations where they could board the trains.

Down east, where suburban train service has been well developed, the railroads carry big crowds to the games at Boston, New Haven, New York, Princeton and Philadelphia with little difficulty. But even with all this regular and convenient train service, a large part of the 90,000 persons who pack the Yale Bowl on many a fall Saturday come by automobile, as any one who has attempted to get there on a football day well knows.

Down at Columbus, Ohio, I have seen 70,000 people fill the stadium of Ohio State University. Columbus has excellent train service but I think it is a fair estimate, based on having had to walk more than a mile from my parked car to the stadium, that most of the crowd came by automobile.

Out in far western Texas two years ago "Ellick Botts, consulting pumper of Gray Horse, Okla.," and I stopped at a small town of a thousand people, for Thanksgiving dinner. We were driving along the single track of the Texas & Pacific railroad. The railroad showed no particular activity. There had not been a train for hours. But sailing down the main concrete north-and-south road came hundreds of cars. They seemed to spring up out of the desert-like country. They just appeared over the horizon on the dirt section line roads and streamed onto the concrete highway like ants. The main street and restaurants were jammed.

We were told the occasion was the play-off game for the high school football championship for the four or five nearby counties that had high schools in them—and most didn't. They expected more than 5000 people and we believed it. Only a small per cent lived on or near the one-track railroad. It was the automobile that brought them to the game just as it was the automobile that made it possible for them to live 50 or 100 or 200 miles off the railroad.

As I sat in Wisconsin's stadium yesterday I paid more attention to the crowd, I am afraid, than to the game. I couldn't help but wonder at how college athletics had grown from my kid days when we used to crawl under a wood fence and attend the small town college football games. There were no seats. You just wandered up and down the side lines and, when the play got exciting, you crowded out on the field so close to the players that many a time they would be charging into you.

A quarter, I believe, was the admission price. And I am talking about a first class college, Ohio Wesleyan University at Delaware, a school that played Ohio State University, Western Reserve and Case. Finally the crowds got "so big" and the college athletic department so dirty with cash that a couple of ropes were purchased and strung along the side lines to mark where the spectators should stand.

We walked to the football field. A few rode in the street cars, the "wealthy" drove their horses. Sometimes almost two carloads of out-of-town visitors would come by train. Even with Delaware county as well populated as it is today, you could not today get a much larger crowd than 35 years ago if you had to depend on those old means of transportation.

So I watched yesterday's crowd that packed the "visitors" section opposite, and mounted high in the bright sunlight against the clear blue of the sky. Down before us between halves marched two big bands, the home band numbering more than one hundred players, a band that could not have been supported back in the "horse and buggy" days. The spectators had come from their homes in comfort since morning. They returned that evening. It was a pleasant day's jaunt with no hardships and only the cost of the seats, some food and a few gallons of gasoline, to make possible the fullest enjoyment of it.

It is a safe bet that not even the oil men there gave thought to the fact that, if it was not for such cheap and good means of transportation as gasoline affords, these enormous stadiums, the largest by far in the history of the world, would not exist because you simply could not get such crowds together to fill them.

(My private P.S.—I don't want any Wisconsinites to think I was an impolite guest and ignored the game. I had to be neutral, for on one side was my daughter a former Wisconsin student and on the other my son-in-law, a product of Northwestern university. So it was safer for me to comment on the crowd and how gasoline had built the stadium, especially as Wisconsin lost.)

The News From Gray Horse As Ellick Botts Reports It

GRAY HORSE, Okla.

To the Editor:

Things are beginning to hum here after a rather dull summer. Postmaster Henry Throstle has received a supply of blanks from Mr. Farley, also a new inkwell for the postoffice. The blanks are the kind that will be used in taking the census of the unemployed. Gray Horse expects to turn in her usual handsome quota.

The census will be taken by having the mail carriers leave the blanks at people's houses with the request that they fill them in and return. Our community is squarely behind Mr. Hopkins in his work and will do its part in giving him some blood curdling figures with which to confront the Congressmen in case they show signs of being stingy on appropriations. The R. F. D. carriers report that sentiment among their clientele indicates that they will go "over the top" in certifying to their unemployment, now that the winter wheat has been planted and there is not much to do until spring.

* * *

The community was greatly pleased last week when Gov. Marland announced that he will make the race for U. S. Senate next year. The governor ran, or at least, cantered a little, in that direction last year, being left far behind by Josh Lee, who belongs to the Delsarte school of statesmanship. Gov. Marland now proposes to try it again, this time to capture the position held by Sen. Elmer Thomas, inflationist and friend of the Indians.

Our governor teed off in this race at Ponca City, not far from here. It was at a meeting of Young Democrats and the Ewing twins, of Gray Horse, who work for the state, attended. The governor told his audience that he wanted to be given the chance to help assist the New Deal in carrying out its glorious objectives. The Ewing boys reported that his remarks were greeted with one of the best arranged impromptu demonstrations they had ever seen.

* * *

Your correspondent was much interested in the news from Austin, Texas, where the legislature finished its special session without levying any new taxes, although called in by the governor for that purpose. The outstanding piece of lawmaking was a bill to permit hunters to use one dog while hunting deer, thus giving recognition to the usefulness of man's best friend.

* * *

The unidentified picket who has been standing in front of the Gas-Eze filling station for about three months has been taken into partnership by Owner Spud Wilkins. Spud says he figures the fellow has been there long enough to know as much about the business as Spud does and he had run up such a big account helping himself to the bottled pop that it was time he started settling.

* * *

Our new reservoir, completed the past summer — a PWA project — turned out to be a self-liquidating job, as represented originally, although in another sense. The dam gave way in the middle last week and all the water went into the Arkansas River. It was not a complete loss, as both ends remained standing and the Gray Horse Authority is now planning to turn the remains into a triumphal arch in memory of the Confederate Veterans.

* * *

Your correspondent's nephew, Cicero Botts, who won all-conference rating on the CCC football team last year, accepted a position as fullback with one of the large universities this fall. Our opinion is that the CCC is one of the best projects Mr. Roosevelt ever started.

* * *

The WPA writers' project, which has been gathering up history and folklore all over the country, has finished its research in our region and the 10 people who worked here have gone away to write their story. We have very little history but Joe Gristle, who claims he helped kill off the buffalo, kept the writers entertained and taking notes on his recollections. We predict a narrative that will be quite colorful, although having little relation to the truth.

* * *

A phenomenon which has puzzled many, including professors at our state university, is the rapidity with which the people of Oklahoma are growing old. Rolls of the old age pensioners reflect this curious condition and still more baffling is the fact that the largest percentage reach age 65 just preceding elections.

* * *

Quite a few new model cars have reached the local dealers and the demand for same is reported to be brisk. Our agriculturists have done well this year at conserving the soil and preventing erosion (formerly known as crop restrictions) and have been rewarded generously by Mr. Wallace. Jim Attlewitz, township Democratic chairman, conserved the soil on both his farms 100 per cent (formerly known as neglect).

* * *

The school board has about completed arrangements for a WPA grant sufficient to buy radios for all schoolrooms. The last Presidential address given in the daytime was missed by all the kiddies and local political leaders feel such addresses are vital part of modern learning and culture.

Consulting Pumper.
Ellick Botts,

BILLINGS, Nov. 1.—Yale Petroleum Co., Oct. 1 acquired all assets of the Stock Oil Co. according to Paul Stock, president of the Yale company. The Yale company will be managed by the officers and directors of the former Stock Oil Co. Headquarters are at Billings.

Standard Employes Get $4,000,000

NEW YORK, Nov. 1. — Distribution of $4,000,000 to 36,000 employes in the form of credits to their accounts in a thrift plan was announced today for the Standard Oil Co. (N. J.) and its subsidiaries by W. S. Farish, president. The payment will come from company earnings, it was stated.

All domestic employes with a year's service, regardless of their participation in the plan, will receive a minimum credit of $50, it was announced. An additional contribution was made to participants of approximately 22 per cent of his own and the company's contributions from Nov. 1, 1936 to Oct. 31, 1937. More than 90 per cent of the eligible domestic employes are participants in the company thrift plan.

Under the plan the companies guarantee the employe a contribution of dollar for dollar for the first three per cent of the worker's salary assigned to the fund and fifty cents more for each dollar above the 3 per cent minimum required for membership.

The "Typical" U. S. Motorist

(As depicted by the American Petroleum Industries Committee, New York)

More Oil Men In Government, Is Jobber Goal

INDIANAPOLIS, Ind., Nov. 1.—Like many another oil convention, one hundred jobbers who met here Oct. 27 and 28 for the annual meeting of the Indiana Independent Petroleum Assn. bandied stories with an equal number of suppliers; heard talks on the Greatness of America and how to sell gasoline and oil; attended dedication of Indiana's new oil inspection laboratory; elected officers, and passed resolutions against the corporate surplus tax and the federal tax on gasoline.

Significant keynote of the convention, however, was the formation of a definite program to secure a better break for the petroleum industry from government. This included launching the association's president, Robert M. Stith, of Indianapolis, Stith Petroleum Corp., on his candidacy for the Democratic nomination as state senator from Marion County; support of a measure now before the Indiana electorate to outlaw highway diversion; and participation in the case before the Interstate Commerce Commission, at Washington opposing the 6.6 pounds per gallon estimated weight used by railroads as a basis for freight charges on lighter refined products.

Aid Fight on Diversion

Immediate objective of the jobbers will be enactment of an amendment to Article 10 of the Indiana Constitution prohibiting diversion of special taxes on motor vehicles and fuels from other than highway building purposes. The amendment (resolution in form) has already passed the state legislature and will soon be placed before the electorate.

"A total of $7,000,000 has been diverted to the general state fund from the highway fund so far," Humphrey C. Harrington of Indianapolis, deputy Marion County prosecutor, told the jobbers. This amount, he said, would have maintained 13,890 miles of all kinds of roads, or built 509 miles of new road—which in turn would have aided the petroleum and automotive industries. The $7,000,000 has been diverted since the Act of 1933, allowing such diversion, was passed, he said.

Humphrey attacked the federal gasoline tax of one cent per gallon on four grounds as follows:

Levying such a tax is a prior right of the states.

It hits the farmers and the poor, rather than being predicated on ability to pay.

It taxes the already over-taxed automotive and petroleum industries.

The tax was levied to meet an emergency which is now over. Federal revenues have risen continuously since 1934.

Turning to the state tax, Humphrey said:

"State gasoline tax receipts in Indiana for 1937 are estimated to reach the all time high of $23,500,000. This is at the rate of four cents per gallon."

Oil Men as Legislators

Announcing his intention to seek the nomination as Marion County state senator at the Democratic primaries in May, 1938, Association President Stith urged his fellow jobbers to likewise protect their interests through public office. "Of 28 members in the legislature in one of the Dakotas, 14 are oil men. Don't tell me it can't be done!", he said.

Six-Point-Six Case

"We are not blaming the railroads, but merely correcting an obsolete condition," H. A. Hollopeter of Indianapolis, traffic director of the Indiana Chamber of Commerce, said in explaining to the jobbers the case before the Interstate Commerce Commission of the Indiana Independent Petroleum Assn. vs. the Alton Railroad Co. and others, filed July 29, 1937.

The I. I. P. A. complaint asserts that the estimated weight of 6.6 pounds per gallon for lighter refined products shipped by railroads is in excess of the actual average weight of these products and asks that the weight basis be reduced in the future and that shippers be granted reparations for products moved since July 29, 1935.

If the weight basis is changed, Hollopeter said, Indiana petroleum men will be saved from $18 to $20 per car. He said that the lighter weight of present-day gasoline warranted the change and cautioned all jobbers to keep their old freight bills for use as possible evidence and as a basis for claim in event the ICC grants reparations to shippers.

Resolutions

The resolutions committee, empowered to act for the association as a whole, condemned the federal tax on surplus profits and the federal gasoline tax, and took under advisement a resolution sponsored by motor truck operators urging repeal of the Indiana Motor Vehicle Weight Tax law, passed by the last legislature, which levies a tax on trucks in accordance with the width of the vehicles' tires.

Indiana Jobber Sells to Lubrite

INDIANAPOLIS, Ind., Nov. 1.—Jobbers who gathered here last week for the annual convention of the Indiana Independent Petroleum Association eagerly questioned their treasurer, Charles E. Foreman, of Indianapolis, on the advantages of selling out to a major versus independent operation.

Sale of Foreman's Mid-western Petroleum Corp., jobbing concern started in 1929, to the Lubrite Division of Socony-Vacuum Oil Co., Inc., had just been announced.

For Foreman, the sale meant freedom from competitive worries and an unnamed sum; for Lubrite, a doubling of its gallonage in the city of Indianapolis. Although Mid-Western operated seven bulk plants and 37 filling stations in 15 counties of central Indiana, the greater share of its 5,000,000 gallon a year gasoline business was concentrated in Indianapolis.

Terms of the sale will retain Foreman with Lubrite for at least 18 months as real estate and finance adviser. In this capacity Foreman will assist his long-time friend, Herbert H. Johnson of Indianapolis, Indiana manager for Lubrite.

Finance His Long Suit

Johnson and Foreman were together in the former Western Oil Refining Co. Foreman, associated with Western Oil for 15 years, was comptroller of the company at the time of its sale to Shell Petroleum Corp. in 1929. In that year he organized the Mid-Western Petroleum Corp. and built 10 service stations the first 12 months.

Foreman was a graduate of Indiana University in accounting and finance, which have been his long suit since. He entered the oil business in 1913 as office boy for the former Campbell Oil Co. and subsequently joined Western Oil Refining Co. Mid-Western retains its corporate identity and non-oil property.

Prime question remaining in the minds of Indiana jobbers was whether Cities Service Oil Co., Mid-Western's former supplier, will now be looking for a jobbing concern to obtain distribution in Indianapolis.

Tips on Selling For Independents

INDIANAPOLIS, Ind., Nov. 1. — Successful merchandising for the independent petroleum jobber was the theme of an address, "I'm Not Sold," by Jack Harding of Indianapolis, Harding Advertising Agency, before the Indiana Independent Petroleum Assn. annual convention. Aphorisms from his speech included:

The newspaper has the lowest per capita cost and the greatest flexibility. If you use the newspaper, use the sport page.

* * *

In selling oil products, advertising that reaches the man is more effective than advertising reaching the woman.

* * *

If you buy time on the radio, buy a time when men are at home and not in their offices.

* * *

Direct mail advertising is the best kind for a single station owner. It can be directed to purchasers who are logical prospects—those near or apt to use the highway on which the station is located.

* * *

Handbills will get across a message while it's hot but are resented by housewives.

* * *

A temporary price sign is more effective than a permanent sign. It doesn't matter whether it's a special price or not, but a sign that's up day after day won't be noticed.

* * *

As small independents whom the transient outside your territory has never heard of, cultivate the home market by building confidence.

* * *

Don't make nuisances of your attendants, but train them to ask customers to buy goods.

New Officers

INDIANAPOLIS, Ind., Nov. 1.—George W. Hofmayer of Indianapolis, secretary of the Indiana Independent Petroleum Association, announced the election of the following officers, at its meeting here last week:

Robert M. Stith of Indianapolis, Stith Petroleum Corp., reelected president.

J. Ivan Harris, of Indianapolis, Indiana Farm Bureau, reelected vice president.

J. E. Fehsenfeld, of Indianapolis, Crystal Flash Petroleum Co., treasurer.

Julius Malkems of Louisville, Ky., Aetna Oil Service, Inc., director. Other directors are unchanged.

Regulation of Brands and Price Posting Held Covered in Ca. Substitution Act

N. P. N. News Bureau

LOS ANGELES, Nov. 1. — Some interpretations of the recently amended California Gasoline and Oil Substitution act, as it may affect the marketing of petroleum products, were given at the meeting here Oct. 28-30 of representatives of sealers' offices throughout the state. Representatives of the oil industry attended also and participated in the program.

Responsibility for enforcement of the law has been placed with the city, county and state departments of weights and measures. J. E. Brenton, senior petroleum products inspector for the state, outlined the basis for practical enforcement.

With reference to Sect. 8 of the act, which requires any person wishing to sell under individual brand or trade names to first obtain written consent from the manufacturer for such a rebrand, Brenton said the rule had been made that the authorization must be given as a separate letter or record, and is not acceptable when written or typed on the back of delivery invoices.

He said the size of the authorization form must also contain information as to number of gallons covered by the rebrand consent, name of refiner or producer, kind of product (gasoline or motor oil), date sold, contract number and date, and buyer's brand or trade name.

The authorization must also say that permission to rebrand shall apply only to the product covered by the invoice or contract number as stipulated above and that the buyer's brand name designation shall not be changed and there shall be no admixture added to the product without authorization from the true supplier.

The substitution act also specified certain regulations covering the posting of prices on all pieces of apparatus dispensing gasoline and other motor fuel, such signs to indicate actual total price, including taxes.

A question had been raised in the enforcement of the act as to the legality of "fractions" as a part of the price per gallon. Brenton said his office had been advised that "fractions" were permissible.

He said the question was also asked whether a person could be prosecuted for selling at a price which is less than the actual price posted on such dispensing unit from which a sale is to be made.

Effect on Prices

This is a particularly important matter to the California industry, which had contemplated use of the substitution law to eliminate the practice by some dealers of cutting under the canopy the price posted on the pump. One observer said 40 or 50 cases in which the "actual" price provision was being violated were held up pending a ruling on the point.

Brenton said the question had been submitted to U. S. Webb, attorney general for the state, and that a decision was expected soon.

"The law very definitely states," he said, "that the 'actual total price', including taxes, per gallon of all gasoline or other motor fuel sold, offered for sale, or advertised for sale, must be placed on each dispensing unit, but this law does not say that it is a violation of this act for any person to deviate from this 'actual total price' by giving a rebate, prize, a refund at the end of the month, which refund shall be based on volume purchased, or innumerable other attempted means of increasing gallonage through the medium of offering monetary consideration."

He also commented on cases where the owner of a service station or garage is charging less for deliveries to a truck than to passenger cars, for example 16 cents per gallon to the truck and 18 cents to the passenger vehicle.

If such a practice is followed through the medium of one pump, it is declared necessary that the apparatus carry two signs reading respectively literally as follows: "Commercial cars 16 cents, passenger cars 18 cents", and each sign must conform as to size of sign, letters and numerals with requirements of the statute.

State inspectors and county sealers have found, it was pointed out, signs giving the name of the gasoline, as required, and the nominal price to the retail trade but including the annotation "Truck Rates". Such signs must be amended to show the actual price to trucks, it is held.

Other signs have been checked which said, "Blank Gasoline 15c, 7 gallons for $1". Such signs should be corrected to "Blank Gasoline 15c, deliveries of 7 gallons or more 14 2/7c."

"Bargain" Prices Out

In other words, the speaker said, the actual price per gallon must be stated if the price is to be advertised. There is no provision for advertising a group price. The entire reference to a price under subsection B of Sect. 11 of the act is total price per gallon; gallon being singular, there is no reference or inference which permits a group price designating gallons (plural).

Another paper on the connection of the petroleum industry and weights and measures was prepared by F. E. Foster, managing director of the California Oil and Gas Ass'n. The paper was presented by Dave Kilgore, secretary of the association, in the absence of Mr. Foster. In this paper it was declared that the 1937 amended oil substitution act in California — the result of long conferences between state, county and city sealers, together with legislators and oil men — was thought by Foster to look as though it would be "workable and effective."

"It is a substitution and anti-fraud act and a fair trade act combined," he said. "Its principal fair trade features are its requirements for posting the actual selling prices, its regulation of price signs, and its regulation of brand posting signs as to dimensions, contrast of colors, identifying of reclaimed oil, and outlawing of deceptive, misleading advertising signs.

"It has teeth, a material aid in enforcing the law. The new measure will remove unsightly chiseling gasoline signs throughout the state, since the price provision sets forth specifications designed to do away with false and misleading advertising. Gasoline signs must carry the brand name, or the words 'no brand' and the price indicated on the signs must be limited to twice the size of the name of the gasoline advertised.

"Outlawed" Products

"The rebranding of both gasoline and motor oil is effectively regulated, and yet these provisions are not too onerous for the industry to observe. In the outlawing of the sale of crankcase drainings and 'lube' distillate as motor oil, unless compliance in the specifications is strictly met, a most undesirable practice has been prohibited. Products offered as motor oil may not longer contain water and suspended matter, and a maximum acidity index is set.

"Since no gasoline or oil may be sold unless it meets with the new state specifications, the buying public is protected from inferior products. Under the new act there can be no deception with regard to reclaimed motor oils, since each can, bottle, or drum containing this product must be plainly marked.

"The Department of Weights and Measures is now enabled to cope with minor enforcement problems through express permission to promulgate regulations under this statute.

"It is believed that a very large percentage of the service station operators throughout the state endorse the act and will comply with all its provisions. They realize that the act operates to their advantage and against the chiseler and the cheat."

Burris G. Wood, state chemist, outlined in a paper "Physical Analysis of Gasoline and Motor Oil" what happens to samples taken by inspectors and sealers in the field, and how the petroleum products laboratory arrives at the conclusion that substitution or adulteration may be going on in a particular area.

Atlantic's Gasoline Pipeline Opened

PHILADELPHIA, Nov. 1.— The 225-mile extension of the gasoline pipeline of the Atlantic Refining Co., from Williamsport, Pa., to Buffalo and Rochester, N. Y., was to be placed in operation a few days ago.

The total expenditure for the extension, including pumping stations and terminals, was around $3,000,000. At Williamsport the new line joins the extension built in 1936 from the Atlantic Refining Co.'s line running from Philadelphia to Pittsburgh.

The recent extension was laid by the Keystone Pipe Line Co. in conjunction with the Buffalo Pipe Line Corp. Both companies are subsidiaries of the Atlantic Refining Co.

A. P. I. Supplements Out

NEW YORK, Nov. 2.—A second supplement has been published to the second edition of American Petroleum Institute standards on "Miscellaneous Pumping Equipment." Revisions adopted at the Colorado Springs meeting last June, are included.

Maintenance Cost of Asphalt Roads Is Shown To Be Lower

N. P. N. News Bureau

NEW YORK, Nov. 1.—Skepticism of the merits of asphalt as a road paving material, which was injected, perhaps unintentionally, in a series of articles which the Cleveland Plain Dealer directed against the Ohio State Highway Department, brought a quick defense from the Asphalt Institute and revealed some angles of the "asphalt versus Portland cement" road construction controversy.

The Asphalt Institute entered the picture when W. R. Macatee, its Ohio representative, replied to an article written by Edwin J. Bath, legislative agent of the Ohio Farm Bureau. The article was published in the bureau's journal and re-published in the Plain Dealer. It asked a series of questions of the State Highway Department and implied a criticism of the use of asphaltic concrete in Ohio.

Macatee, in an article also published in the Plain Dealer and later in the bureau's journal, replied to questions which pertained to the use of asphalt in Ohio and which also might apply to the general use of this product.

Two of the questions answered by Macatee were "why is Ohio turning more and more to the laying of bituminous roads" and "why is the total of high type pavements on the Ohio system only 41.8 per cent as against 98.2 per cent for Illinois."

Growing Use of Asphalt

In answering, Macatee pointed out that the U. S. Bureau of Public Roads shows that portland cement concrete constituted 15 per cent of the combined mileage constructed on all state highway systems during 1936, while bituminous or asphaltic types constituted 85 per cent.

During 1935, he stated, the bureau showed Portland cement concrete construction constituted 17.5 per cent and asphaltic or bituminous types 82.5 per cent. Bituminous roads predominated in 1936 construction in 42 of the 48 states, the bureau reported, putting Ohio along with the large majority.

Comparing the Ohio and Illinois road systems, Macatee stated, in part, that "as of Jan. 1, 1937 there were 14,593 miles of highway serving farmers and urban centers on the Ohio system and only 10,327 miles in the Illinois state system, so that, in making comparisons of percentages constructed, it is hardly fair to throw out of consideration its enormous disparity in the total mileage."

Macatee also pointed out that "Illinois has 10,126 miles of high cost pavement and only 11 miles of intermediate and low cost type, while Ohio having 6980 miles of high type pavement supplements this mileage with 4510 miles of intermediate and low cost types, indicating that the system has been built with intelligent consideration of the relative traffic importance of various highways. This makes for Ohio a total surfaced mileage higher than water-bound macadam, of 11,480 miles."

Methods of Financing

Illinois and Ohio also have different methods of financing highway work and different incomes for this purpose, Macatee added. In 1936 the state highway debt of Illinois was $133,554,000, while Ohio had no state highway debt, he stated. Illinois' state highway income from all sources during 1935 was $37,693,000 compared to $29,135,000 in Ohio during the same period. In 1935, Illinois spent $2,807,000 for administration and engineering and Ohio spent $1,680,000 for this purpose, it was shown.

Macatee, defending asphaltic concrete (Type T-135)—used extensively for salvaging and modernizing Portland cement concrete roads—stated that it was suitable for primary roads and was not costly to maintain. Official records show that upkeep charges on Portland cement concrete averages more than 100 per cent greater than on asphalt of comparable age, Macatee added.

The accompanying maintenance cost record, as reported by the City of Minneapolis Superintendent of Pavements in Engineering News-Record, April 1, was cited by Macatee to bear out his contention.

Relative Costs of Maintenance of Asphaltic Concrete and Portland Cement Concrete for Years Built

ASPHALTIC CONCRETE		PORTLAND CEMENT CONCRETE		Higher Annual Cost
Year Built	Av. Maint. per Sq. Yd. per Yr.	Year Built	Av. Maint. per Sq. Yd. per Yr.	of Concrete over Asphalt
1898	$0.01394	1912	$0.02185	57 per cent
1915	0.00160	1915	0.00311	94 per cent
1920	0.00422	1921 (a)	0.01324	213 per cent
1923	0.00296	1923	0.01361	360 per cent
1931	0.00000	1931	No data given.	

(a) Nearest date shown comparable to 1920.

Earliest construction of asphalt was 1898, and concrete 1912. The accumulated Maintenance Charges to 1936 on asphalt were 52.999c, on concrete 52.456c—almost identically the same despite the fact that the asphalt had given 14 years longer service. It will be noted that asphalt constructed in 1931 has cost nothing to maintain.

Road Building Offers Growing Market For Oil Products

N. P. N. News Bureau

NEW YORK, Oct. 25. — Highway economics and new and old uses for asphalt will be the major themes at the Eleventh National Paving Conference, to be held Dec. 5 to 9 at Memphis, Tenn. The meeting is sponsored by the Asphalt Institute and the Assn. of Asphalt Paving Technologists.

Subgrade stabilization, asphalt highways and asphalt for airport surfaces, river and harbor protection, country highway sidewalks, soil erosion control and moisture conservation will be discussed.

Speakers will include Thomas H. MacDonald, chief of the U. S. Bureau of Public Roads; B. L. Boye, Socony-Vacuum Oil Co. and president of the Asphalt Institute; J. S. Miller, president of Asphalt Technologists Assn.; Lt. Col. W. A. Hardenbergh, associate editor of "Public Works"; and engineers from state and federal highway departments.

The continued steady gain in the use of asphalt the past two years has increased the importance of this market, particularly as the petroleum industry plays an increasingly larger part in supplying asphalt. Imported natural asphalt is a very small per cent of the total asphalt used in this country.

The following table shows the 1935-1936 record and cumulative showing of various road-construction products, in the U. S., according to figures issued by the U. S. Bureau of Public Roads.

Miles of Various Types Roads Built in U. S.

Type	Built 1935 Miles	Built 1936 Miles	Existing Jan. 1, 1937 Miles
Surface treated	5,689	7,011	84,679
Low-cost bituminous mix	3,632	5,470	39,343
Bituminous macadam	619	553	16,122
Bituminous concrete	837	1,533	19,958
Portland cement concrete	2,282	2,568	89,301
Total	13,059	17,135	249,403

Percentages
(Based Upon Above Figures)

Type	Built 1935	Built 1936	Existing Jan. 1, 1937
Surface treated	43.7	41.1	33.9
Low-cost bituminous mix	27.8	31.9	15.8
Bituminous macadam	4.7	3.1	6.5
Bituminous concrete	6.3	8.9	8.0
Portland cement concrete	17.5	15.0	35.8
Total	100.0	100.0	100.0

Roads Bureau Studies Highway Designs

WASHINGTON, Nov. 1.—Research engineers of the Bureau of Public Roads are attacking the problem of working out a method of designing flexible road surfaces, such as gravel, macadam and bituminous mixtures, depending upon the locality where they are laid, according to the annual report of the BPR.

Such a method is needed to design surfaces properly adapted for different loads, taking into account differences in materials, and in soils on which road surfaces are placed. Special apparatus is being devised for use in tests that are to be made to throw light on the subject.

Such research will undoubtedly result in adoption of more bituminous surface type roads on terrain requiring flexible road surface, according to engineers.

Record Tax Collections

RICHMOND, Va. — Virginia gasoline tax collections in September were $1,566,746.41, paid on 31,334,928 gallons—the highest September on record—according to the Virginia Motor Vehicle Division. This is an increase of 1,386,784 gallons over September, 1936. Total gallonage for the first nine months of 1937 is 255,819,000 gallons, an increase of 9.9 per cent over 1936 collections for the same period.

Mid-Continent SKYLINE

By LAWRENCE E. SMITH, N. P. N. Tulsa News Bureau

N. P. N. News Bureau

TULSA, Oct. 30. — November opens with decreased allowable production in all states, except New Mexico, which have official restriction of crude oil output as part of their conservation practice. The allowables for November, compared with October quotas, are as follows:

State	November	October
Texas	1,386,949	*1,405,844
Oklahoma	575,000	600,000
Kansas	180,215	193,800
Louisiana	253,150	266,700
New Mexico...	104,000	104,000

*Allowable on the first day of the month.

These figures cannot be added up and subtracted from each other and the remainder declared to be the total reduction in allowable production for this group of states, for the reason that Texas does not have a fixed allowable. It grows and grows during the month, each new well swelling the total, and no man can say just what the daily average allowable will be for any day after the first. The other states set a figure which is supposed to be constant throughout the month, except New Mexico, whose allowable is fixed semi-monthly, the figure for November in the tabulation above being for the period Nov. 1-15, inclusive.

Oklahoma and Kansas held their hearings the past week and orders of the state conservation agency were announced the same day. Some think Kansas didn't cut its production deeply enough, in view of the pipeline proration in the western part of the state. Major pipelines there are now running less oil from leases than the state-fixed allowable, due to lessened demand and lack of pipeline room. The Kansas Corporation Commission for November cut off 13,585 barrels daily from the October allowable and its November figure is still 9485 barrels less than the daily average demand for the state as forecast by the U. S. Bureau of Mines.

Stanolind Crude Oil Purchasing, Sinclair Prairie Oil Marketing Co., Continental Oil Co. and the Kaw Pipe Line Co. group—Cities Service, Phillips, Texas and White Eagle—are the chief buyers of western Kansas crude. Only Continental said it wanted more oil in November than in October, about 2000 barrels daily more.

* * *

No Protests in Oklahoma

The Oklahoma Corporation Commission lopped off 25,000 barrels daily for the state for November setting a figure of 575,000 barrels daily, which is 23,000 barrels below the Bureau of Mines demand estimate. No protest at the reduction, which was made on the chief conservation officer's recommendation, was heard at the hearing. Oklahoma has been falling a little below its allowable recently and has less prorated oil than has Kansas.

Louisiana's reduction was a reflection of the pipeline proration that is going on in both north and south fields of the state. The November order takes 5000 barrels daily off the October figure for the Lisbon field, setting 10,000 barrels as the November allowable. That is more than the present demand but completion of a pipeline now under construction will increase the takings during the month.

New Mexico kept in its October groove, a little under the bureau's forecast. In this state, more than any other of the prorated group, purchaser company demand governs the allowable rate of production for there is no physical means of getting more oil to market than the major buyers choose to take.

* * *

Contest in Arkansas

The Arkansas board of conservation is taking its first fling at proration, as reported last week, but its order on the Miller county extension to the Rodessa field, effective Nov. 1, is meeting with some opposition and court test is rumored to be in the offing. There is some doubt that the state laws in Arkansas clearly authorize the board to order restriction of production.

The effect of the various reductions in allowables over the Mid-Continent and the southwest was to lessen some of the apprehension that had been felt concerning the ability of the industry to keep in balance on supply and demand over the winter months. Some contend that still further reductions in production will be necessary. The Texas Railroad Commission will take another look at the situation Nov. 15, having set its statewide hearing a little earlier in the month than usual.

* * *

State Loses Suit

Upward of three years ago the state of Texas sued numerous oil companies in East Texas to recover some 500 acres of land along the Sabine River, north of Gladewater, contending that incorrect measurements in the big Francis W. Johnson survey had been used in the leasing. In addition to establishing a vacancy in title and survey, the state sued for more than $7,000,000, which it said represented the value of oil produced from the disputed lands.

The state lost in district court and appealed to the Third Court of Civil Appeals. Last week it lost again.

* * *

No New Taxes

The Texas legislature devoted one month to consideration of new tax measures, but adjourned without doing anything in this regard. Gov. Allred had called the special session and had made his request for about $15,000,000 annually in new money, much of which was to go to old age assistance.

Legislators seem to be impressed with the fact that the oil industry is paying far more than its share already. The governor was looking at the natural resource industries chiefly in his quest for more money. The Mid-Continent Oil & Gas Assn. of Texas recently made a survey of taxes paid in 56 counties for 1936, compared to 1935. Oil producers in these counties paid an increase of $1,395,172 while levies on all other property decreased $449,627. Local levies on oil producers in some of the counties containing stripper well fields amount to as much as 9 cents per barrel.

Public Land Permits

WASHINGTON, Nov. 1. — Secretary of the Interior Harold Ickes has made public the regulations under which oil and gas prospecting permits on the public lands are eligible for extension under the act passed by the last congress. The secretary's statement was a repetition of the wording of the law.

McGaha To Head Texas Producers

DALLAS, Oct. 30. — Charles P. McGaha, Wichita Falls producer, was elected president of the Mid-Continent Oil & Gas Assn. of Texas at its annual meeting Oct. 29 in Dallas. He succeeds Jake L. Hamon, Dallas, who has held the office two years.

To the retiring president, the association presented a wrist watch. Under his leadership a broad program of tax analysis was started and the association has worked diligently to inform the Texas public on matters affecting the natural resource industries, chief of which in Texas is oil.

Annually this association makes awards for distinguished service. This year the recipients were J. D. Collett, Fort Worth, who is president of the general Mid-Continent Oil & Gas Assn., and Wallace Pratt, long an executive of the Humble & Refining Co. and now a vice-president and director of the Standard Oil Co. of New Jersey.

Matthew S. Sloan, board chairman of the M. K. & T. Railway, was the principal speaker at the association's general meeting also held Oct. 29.

Affects All Business

"The wages and hours measure would establish another board to be dominated by the President," said Mr. Sloan. "The results would be more regulation coupled with increase in overhead and a direct effort at controlling prices. As for crop control, here again will be presented the problem of restricted production which to my economics is false. What action Congress takes on these measures will reflect not only on the railroads and the oil industry but on all business."

Other officers of the association elected were: George C. Gibbons, Dallas, re-elected executive vice-president; Bryan Payne, Tyler, vice-president of the East Texas district, succeeding L. A. Grelling, Jr., Tyler; H. R. Stroube, Corsicana, vice-president of the East Central Texas district, succeeding Lloyd Wheelock, Corsicana; Harry Adams, Midland, vice-president of West Texas, succeeding J. C. Hunter, Abilene, who in turn was made vice-president of West Central Texas, succeeding Paul Pitzer, Breckenridge; H. R. Cullen, Houston, vice-president of Gulf Coast, re-elected; R. L. Underwood, Wichita Falls, vice-president of North Texas, re-elected; E. J. Dunnigan, Jr., Pampa, vice-president of Panhandle, re-elected, and Al Buchanan, San Antonio, vice-president of Southwest Texas, re-elected.

E. Texas Refiners' Secretary Testifies

(*Continued from page* 11)

1935, stated that reaction of the Mid-Continent gasoline market was "very encouraging" after the NIRA oil code went out (May 27, 1935), adding, "major companies are still actively purchasing East Texas gasoline for Gulf Coast shipment."

Watchful Eye Kept

Some of the phrases appearing in letters dated in the spring and summer of 1935, were: the major companies participating in the buying program have kept a watchful eye for any gasoline that might resemble distress material; major companies have continued this week their buying program in East Texas and other districts; refiners, through their combined efforts, have prevented any downward trend in the published gasoline quotation list.

In some letters dated in the fall of 1935, these phrases appeared: unless inter-refinery purchasing is continued there will result a drastic reduction in spot gasoline quotations, and, in turn a decline in published prices; prices, however, were restored later in the week, due to quick inter-refinery buying support; marketers feel published quotations cannot possibly be maintained at present levels unless quick action is taken to clear the open market of distress material.

Cline Called To Stand

Reading of these letters consumed nearly the entire morning session of Oct. 28. Shortly before the noon recess the government called as a witness, Robert N. Cline, Tyler, Tex., secretary of the East Texas Refiners Marketing Assn.

Cline "estimated broadly" that East Texas refiners shipped 30,000 cars of gasoline in 1935, and an equal number in 1936, with about two-thirds moving in interstate or foreign commerce.

The marketing association, according to Cline, charged its members a commission on their sales "in our own trade territory at the going market price." He said the association's sales ran about 700 cars a month.

At the start, Cline added, sales through the association were insufficient to meet expenses, so it was suggested that commissions be charged the refiners even though sales were not made through the association.

"Why Not Humble"

Lewin tried to make the point that "regularity of buying" was another consideration in the charging of commissions. He asked why commissions were charged on purchases by The Texas Co. (a defendant) and not on purchases of Humble Oil & Refining Co. (a subsidiary of Standard of New Jersey and not a defendant).

Cline explained that when Humble was purchasing the association was in better financial shape and was not charging commissions on sales not made through the association.

Pressed by Lewin as to the meaning of "going market price," Cline replied the "price we could consistently sell at." Replying further, the witness said he "presumed" that the published price reflected the refiners' prices.

Lewin brought out that Cline had testified before the grand jury to the effect that most of the time the major companies offered the published market price.

A sharp exchange between counsel developed as Lewin tried one avenue after another to link up The Texas Co. to the East Texas marketing association. Judge Stone sustained objections to Lewin's question, "Didn't you feel that Texaco was supporting your association, though not openly?"

Surplus 'Gas' Defined

Cline's definition of "surplus gasoline" was that amount over and above what the refiner has a "fairly stable" outlet for through brokers and jobbers. He estimated that only about 50 cars, other than the major company purchases, were bought through the marketing association.

He said he couldn't recall John M. Bradshaw, Dallas broker, buying for anyone else than Gulf, although he knew Bradshaw also bought in East Texas for W. H. Barber Co., Chicago broker-jobber.

Cline denied that there was any "understanding" as to what the major companies would pay in buying through the association. He admitted that William Tracey, Sinclair buyer, bought at a flat price "around the low of *Platt's Oilgram*," but he did not know whether the *Oilgram's* East Texas price quotation followed the Oklahoma market.

Didn't you know by 11 o'clock each Monday morning how much surplus gasoline there was in East Texas," Lewin next asked Cline, and the reply was yes.

Cline testified that some major company buyers asked for this information and some didn't; if they did ask, he gave it to them, he added.

"How could you dictate a price if the material was distress gasoline," Lewin asked, following up in his effort to have Cline say that the major companies set the price at which they bought.

"We didn't have to take any price offered," Cline replied.

Then Cline's definition of "surplus gasoline was again called for. He also explained that East Texas refiners worked under a differential of $13 a car when selling outside their "territory," and that most of their production was now moving to the Gulf.

Jobbers Bought Before

"But before your association was formed, Mr. Cline," came back Lewin, "were there not lots of Independent jobbers from the Standard of Indiana territory going down into East Texas and bringing gasoline up here?"

"Yes," Cline replied, "but that was early in 1935—before the Connally Law when there were 80 refiners in East Texas and not 12 as now."

"And if the major companies didn't buy that gasoline through your association, jobbers and brokers from up here could still buy it, couldn't they," Lewin persisted.

"They can still buy it—I have never seen the day when any northern jobber couldn't buy in East Texas," Cline insisted.

Lewin then quoted from one of the market letters, put in evidence Oct. 27, to the effect that "all available supplies of gasoline in East Texas" had been purchased and presumably for shipment to the Gulf Coast. The letter also stated that several marketers and brokers, normally buying in this territory, "were forced to seek other sources of supply."

Says Jobbers Can Buy

Cline still insisted, however, that "there wasn't a day when a jobber or a broker from the north couldn't buy gasoline in East Texas." The major companies may have bought up the "surplus" but the small refiners "are still protecting their regular trade," the association secretary contended.

Majors Didn't Buy Then

Opening the morning session of Oct. 29, Cline testified that most of the major companies were not buying in East Texas in January, 1935, (immediately prior to period of the "conspiracy" alleged in the indictment).

Lewin brought out that Cline had testified before the grand jury to the effect that when some major companies started buying in East Texas in March, 1935, "he felt that they would be steady buyers."

Pure Oil Co. purchased 1443 cars of gasoline in East Texas, on which the association charged commission, from March, 1935, to April, 1936, according to Cline.

"Apple-Cart" Letter Read

Lewin then read a letter from D. K. Chamberlin, Tulsa, of Pure, stating that some cars purchased did not meet specifications and suggesting that possibly assessment of some penalty might be more effective than complaints.

"However, before taking this action," the letter continued, "would appreciate an expression from you. We don't want to do anything to upset the apple-cart or work an undue hardship on you but we are getting 'damned' tired of the negligence and indifference exhibited by these refiners."

Cline explained the "apple-cart" reference, saying that Chamberlin was under the impression that the association secretary personally received a commission on all gasoline purchased and was warning him to do a better job or lose the Pure Oil purchases.

Lewin tried to make Cline say that the "apple-cart" phrase referred to "buying agreement."

At Lewin's suggestion, Judge Stone read from Cline's grand jury testimony about the Chamberlin letter, "I presume he meant the buying of his company and several other companies, if they have an agreement."

Cline suggested that if Judge Stone read further on the grand jury testimony it would show that "if there was an agreement, I didn't know anything about it."

"It would show that you suspected an agreement," Lewin interposed, bringing down a shower of objections from oil company attorneys.

Lewin resumed his questioning but another clash broke out when he asked Cline what Neil Buckley had told him The Texas Co. would do about buying in East Texas. For nearly half an hour there was a battle royal over "hearsay" testimony in which three of the government attorneys and a number of oil company lawyers took part.

Finally, Judge Stone permitted the question but reserved his decision on striking the answer. Cline answered.

"Do you want that stricken," the judge asked as a ripple of laughter swept the courtroom and one lawyer commented on a "tempest in a teapot."

Cline's memory was "refreshed" with grand jury testimony about his saying that Buckley told him Texaco would be buying 100-150 cars a month but not through the association. Cline said he knew Texaco was buying at the "low" of *Platt's Oilgram*.

Next, Lewin questioned Cline about information he had given

Bradshaw Goes On Stand This Week

and received from "Whitey" May, described as a Texaco scout.

Kept No Records

"Would you say that 99 per cent of your sales activities for the association is through personal contacts and over the telephone—not in writing," the government attorney then asked Cline.

"I would say 100 per cent," Cline replied promptly.

Lewin then brought out that, except for records of commissions, Cline "kept all his records in his head." The association secretary pointed out that he had no office except in his home.

Lewin tried to bring out, with quotations from the grand jury transcript, that Buckley had instructed Cline to keep no records. Cline denied this, although admitting that it was "quite possible" Buckley had said it was unnecessary to send him reports, as they were in frequent contact over the telephone.

Shortly after opening of the afternoon session, Oct. 29, Cline's grand jury testimony was read by the court to the effect, "I collect commission only on sales at the published market price—that is the rule of our association."

Since giving that testimony, however, Cline explained that he had checked with his members "to satisfy myself" and found that on some sales at less than the "published price" he had collected commissions.

The government attorney then directed the witness' attention to a chart purporting to show East Texas market quotations of *Platt's Oilgram* on every Monday in 1935-36 for third grade gasoline.

Replying to Lewin, Cline said the market was "slow" in January and February, 1936.

Sales Under Oilgram?

Weren't there a great many sales at that time as much as 0.375 cents under *Platt's Oilgram?*" Lewin next asked.

Maurice F. Hanning, attorney for *Platt's Oilgram*, objected, asking that the question specify the type of sales. This question was then broken up.

As to jobber prices, the witness said there may have been such sales but he did not recall them. The same answer was given to a similar question about sales to brokers.

Later, he testified that there were some such sales on which he had charged commissions even though they were not at the "going market price." Lewin objected that this was "hindsight."

During the argument, Hanning declared that sales to major companies were not reflected in *Platt's Oilgram*, and that the masthead was the best evidence of that.

The government is not bound by what *Oilgram* asserted its prices were, Lewin contended, declaring that the indictment charges the *Oilgram* price was "predominantly determined by spot market sales to major companies through these two pools."

Says Sinclair Bought 3782 Cars

Cline next testified that Sinclair bought 3782 cars of gasoline from March, 1935, to April, 1936; Gulf, 2291 cars; Continental, 50; Tide Water, 867; Louisiana Oil Refining Corp., 65; Cities Service Export Oil Co., 534 (in February and March, 1935).

The Texas Co. bought 800 cars but not through the association, Cline added.

Questions About Oilgram

After Cline had testified that John Steiger, of *Platt's Oilgram*, Tulsa office, called on the telephone about once a week, but that he had met the *Oilgram* man only once, Lewin concluded his examination of Cline with two additional questions.

"Did Steiger ask you for prices?" Lewin asked, and receiving an affirmative answer, inquired, "And did you give him the prices at which your members were selling to major companies?" Cline said yes.

On cross-examination, Col. Donovan brought out that no officer or member of the East Texas Refiners Marketing Association was indicted in the "conspiracy" case and that the association is still negotiating sales with major companies.

Just before the week-end recess was called, H. C. Walker, attorney for J. A. Welch, of Louisiana Oil Refining Corp., cross-examined briefly.

Cline Asked One Question

Cline took the stand at the opening Nov. 1, starting the fifth week of the trial. Defense counsel waived further cross-examination.

On redirect examination, Lewin asked who was the Texaco buyer and received the answer that it was done under supervision of P. C. Scullin, a defendant.

Then, the government called as a witness, John M. Bradshaw, of Dallas, Hercules Oil Co. (broker), with Wm. P. Crawford, local attorney hired by the government, examining for the first time.

Bradshaw testified that from 15 to 20 per cent of the gasoline he bought for Gulf was purchased through the East Texas association. The Dallas broker said that "practically all" of his purchases for Gulf were at a "flat price" from 0.125 to 0.25 cent below the "low" of *Platt's Oilgram*.

The witness said he could not recall testifying before the grand jury that he told the *Oilgram* representative, when he called, that there was no gasoline available in East Texas for a period of 45 days in January to March, 1935.

Replying to Crawford's question, Bradshaw said he had bought as much as 0.75 cent below the "low" of the *Oilgram* —it was "off-specification" material, he added.

Telegram To Boswell

Over objections of defense counsel, Bradshaw was questioned about a telegram of April 10, 1935, in which he allegedly told Boswell Oil Co., Cincinnati, that independent refiners would

(Continued on page 22)

WEST COAST PROBE CONTINUED

N. P. N. News Bureau

WASHINGTON, Nov. 1. — Three members of the legal staff of the Justice Department's anti-trust division are to arrive in Los Angeles this week to continue the department's investigation of marketing practices of west coast oil companies.

The trio has been prepared to go for several weeks, but has been kept here pending receipt of word from the west coast companies that they would let the Justice Department representatives thumb through their books and records to see how the 1930 consent decree is being complied with.

Apparently the "word" came last week, for the lawyers — Herbert Borkland, M. L. Huberman, and Henry McLernan — left Washington over the week-end.

Letters Last Month

A probe into compliance with the 1930 decree—entered after an anti-trust action on the west coast—was begun in 1936, when the Justice Department requested the Federal Trade Commission to make an investigation.

A report on this FTC investigation was tendered the Department in April this year by the commission, but was never made public. For some time it has been known that the department planned to continue the investigation, but the action in sending the three attorneys to the west coast this week is the first move—so far as is known —aside from the letters to the companies asking if their books and records would be available.

When these letters were received on the coast last month, the oil industry in that section was reported as anticipating the visit of the Department's men (N.P.N., Sept. 29, p. 11).

Federal Trade Commission's annual report, made public today, has the following to say about its investigation of the decree, which investigation is deemed to be the reason behind the west coast trip of the Justice Department attorneys:

"Pursuant to duty imposed upon and the power granted to it under Section 6 (e) of the Federal Trade Commission Act, and at the request of the Attorney General made April 16, 1936, the commission conducted an investigation for the purpose of determining the manner in which a consent decree entered in the case of United States against Standard Oil Co. of California, Inc., and others, has been or is being observed.

"The decree in question was entered under date of Sept. 15, 1930, perpetually enjoining and restraining seven major oil companies, 12 independent oil companies, and one individual, operating primarily on the Pacific coast, from conspiring to monopolize and restrain interstate trade and commerce in the manufacture, transportation or sale of gasoline in violation of the Sherman Antitrust act.

5 States Probed

"A staff of attorneys and accountants was assigned to the task of developing the facts and gathering information with repect to the activities and practices of the concerns involved.

"This investigation was commenced June 29, 1936, and was terminated on Dec. 31, 1936. From field offices in Los Angeles the inquiry extended throughout the principal marketing centers of the states of California, Washington, Oregon, Arizona and Nevada.

"The commission transmitted its report to the Attorney General on April 2, 1937. It was not made public by the commission."

Everitt And Steiger Testify Nov. 2

not sell to brokers and jobbers for 4 cents when they could get 4.25 cents from major companies.

Replying further, Bradshaw said it was "well-known" that major companies were buying in East Texas and that the effect on prices was "up".

Shortly after the afternoon session opened, Crawford had Bradshaw identify the first of a series of teletype conversations between the Dallas broker and Mr. Kreuger of Acme Petroleum Co., Chicago brokerage company of which Carl O. Beroth is president.

The records of the teletype conversation were not admitted in evidence, but Crawford questioned the witness about statements apparently therein contained about major company purchasing in East Texas.

Frederick Wood, Sinclair counsel, objected that government "has had in its possession for nearly two years records of Sinclair and other companies showing every purchase order, when bought, price paid, and from whom bought and where it went." He said it was a "waste of time to spend hours asking a witness who could not know."

Chaffetz contended that the only way that the government could prove market conditions in East Texas at the time of the alleged conspiracy was through observers, that Bradshaw was well qualified on this, that if he couldn't recall conditions now the government was entitled to "refresh" his memory with contemporary communications.

Messages Refresh Memory

The battle over this was resumed at frequent intervals, as defense counsel protested that Crawford's line of questioning was not intended to "refresh" the witness' memory but to get across "hearsay" testimony to the jury. Judge Stone held that Crawford's questioning was "proper" and intended only to refresh witness' recollection.

Bradshaw's memory was "refreshed" with statements from the teletype records to the effect that "firmness" of the tank car market would continue as long as major company buying continued, and similar statements.

Crawford closed the examination reading a telegram from Bradshaw to O. H. Carlisle of Gulf about being "anxious" to move additional gasoline and the market being "shaky."

Opening the cross-examination, Gray for Gulf asked Bradshaw to explain this telegram and the witness said it meant if things were shaky it was not the time to buy gasoline. Gray brought out that Bradshaw was buying for Gulf for 15 years—6 years in East Texas—and also buys for other major companies and brokers at $2.50 a car commission.

Gulf's Purchases Listed

Bradshaw said no one connected with Gulf had ever asked him to buy through the East Texas association.

Then, Gray took Bradshaw through a detailed listing of his purchases for Gulf, from Dec., 1934 to Dec., 1936. A great many of the purchases were as much as 0.375c and more below the low of *Platt's Oilgram*—18 cars in July, 1935, were bought at 1.125c below the "low" of *Oilgram*, he said, but he couldn't say whether these were "off-specification" or not.

The afternoon session ended with Bradshaw on the stand and Col. Donovan cross-examining about effect of the Connally law on number of refineries in East Texas, how the Federal Tender Board operates, state proration laws and the like.

Opening the morning session of Nov. 2, Lewin objected to Donovan's "leading" questions on cross-examination of Bradshaw.

Judge Stone sustained the objection. Government counsel were handling a "hostile" witness in Bradshaw so it was proper for them to ask "leading" questions but it was not necessary for Donovan to "lead a friendly witness".

Donovan, going back over some of Bradshaw's telegrams and letters used by Crawford, the government attorney, Nov. 1, elicited from the witness the "explanation" that when he said the East Texas market was "tight" there were only four or five refineries running at that time which could get federal tenders.

Three Letters Read

On redirect examination, Crawford brought out that Bradshaw thought "heavy purchases by the major companies" were also factors in the "tightness" of the East Texas market. Crawford also cited a statement from one of the April, 1935, telegrams to the effect that major companies "have done a good deal of buying and surplus situation is well in hand".

After Bradshaw was excused from the stand, Government Attorney Chaffetz read three interoffice letters of Socony-Vacuum Oil Co. One mentioned "necessary stabilization purchases" and suggested canceling "exchange arrangements" between Magnolia and Empire.

Another dated Feb. 13, 1935, said "place all Metro (third grade) purchases through Jacobi. Have 75 cars now overstock and for which we have no use at the present time."

The last hour of the morning session was devoted to a whispered argument at the bench over admissibility of some more documents, with no decision reached up to time of recess.

There was more argument at the afternoon session, Nov. 2, with Judge Stone finally ruling that the documents would be admitted against the Shell defendants only. Government Attorney Chaffetz then read several.

The first one, dated Jan. 4, 1935, from Mr. Reuther stated something about "preferring to wait for program as do not believe individual buying will assist quotations." Another letter quoted Mr. Carnes as saying it was reported major companies would buy 250,000 barrels a month in East Texas. Several others listed major company purchases with names of sellers.

Steiger Testifies

Ralph G. Everitt, Wichita, Kans., secretary of Globe Oil & Refining Co., was on the stand a few minutes. He testified that I. A. O'Shaughnessy, president, owned about 40 per cent, and controlled between 55 and 70 per cent, of the stock in each of the three Globe companies.

The witness said he couldn't recall testifying before grand jury that the Blackwell refinery was closed down in January or February, 1936, because storage was full.

Next the government called to the witness stand, John Steiger, Tulsa, of *Platt's Oilgram*, who testified he was 25 years old, that he started as an office boy and was now a "market checker."

Guided by Government Attorney Lewin's questions, Steiger told about the close connection between NATIONAL PETROLEUM NEWS and *Platt's Oilgram*, who his superiors were, octane brackets, and other details about the two publications.

"A Refreshing Witness"

Steiger gave his definition of "open market" and "spot market", emphasizing that the *Oilgram* does not consider contract sales or sales based on a price to be published in the future.

Asked about the volume moving on the open spot market, Steiger said any answer he could give would be "only a wild guess".

Hanning, attorney for *Oilgram*, objected when Lewin handed up to the court the grand jury transcript, contending that Steiger was not a "hostile" witness. Judge Stone sustained the objection.

"This is a very refreshing witness from what we have been having," Judge Stone remarked. "I am convinced that this boy is trying to give us honest answers."

Steiger said that he might have stated before the grand jury that the Oklahoma market price was largely "nominal" but that his best recollection now was that those prices were supported by actual sales.

Typical Oilgram Day

"Now, tell us," Judge Stone directed the witness, "What do you do at the office each day"?

"Well, I get down to the office at 8:30 and work on correspondence and routine stuff," Steiger replied. "Then about 9:30 I begin making my market calls. Our subscribers are interested in contract buying, broker buying and inter-refinery buying — *Oilgram* prices don't take into consideration broker and contract buying or inter-refinery buying but our readers are interested in the extent of such movement because such purchases remove much material from the market ———"

Lewin interrupted here, saying, "I don't want this witness to run on and on."

"I much prefer to get the information I want," replied the Judge, directing Steiger to continue. The witness then told how he telephoned from 15 to 35 refiners daily and gave the gist of a typical call.

Volume a "Guess"

Steiger said he couldn't give anything but a "guess' as to the volume of spot market sales of 68-70 octane gasoline in the West Texas market.

"I don't want to impeach the witness in the slightest degree," Lewin said, "but didn't you testify before the grand jury that it was only one or two cars a month?"

"If I said that," Steiger replied, "I must have understood your question to be 'one or two cars daily' ".

Lewin brought out that Steiger checked only one jobber—Wm. R. McCain, Springfield, Mo., of Purity Oil Co. — for prices.

"Then, you have to take the word of independent refiners as to prices they say they are selling at?" Lewin asked, and the witness said yes.

Steiger pointed out that there are "very few jobbers" in the Mid-Continent area buying on the open market to check with.

However, he added, brokers' sales to northern jobbers were taken into consideration while broker purchase prices, while not considered, did furnish a "check".

Asked about "inter-refinery buying", Steiger said it meant sales from one refinery to another, including sales between two independents.

"We mentioned repeatedly in our market leads of *Oilgram* that major companies were buying," Steiger added.

Lewin asked from whom he obtained his information about major company buying.

"From the major companies themselves," Steiger replied, going on to list also Cline, Bradshaw, Jacobi and Buckley—all of whom have previously testified in the trial.

Steiger gave his "best recollection" as to what companies were buying in East Texas and Mid-Continent.

Judge Stone sustained an objection to a question about "buying programs," asking the government attorney what he wanted to prove.

"We want to show that both these trade journals knew two pools were working in the Mid-Continent and East Texas and to impute that knowledge to Steiger's superiors — Platt and Mosher."

Gave Volume, Price

In his conversations with Jacobi, Steiger said the Socony-Vacuum buyer gave him volume and occasionally prices at which major companies were buying. He said he didn't recall Jacobi ever giving him any names as to who was buying.

Steiger said he couldn't recall that Jacobi had mentioned the term "dancing partner" but admitted having heard it used.

The questioning about major company buying was reached as the courtroom clock passed 5 p.m. — the usual adjournment hour.

For more than two hours, Steiger had testified with only one or two objections coming from oil company counsel. But as the questions turned to buying, objections began to crop out. A recess was called until Nov. 3, with Steiger still on the stand.

Order Is Delayed

TULSA, Nov. 2. — Limitation of production in Miller county, Ark., has been delayed until the state board of conservation completes another hearing, Nov. 12. The order, cutting production 5000 barrels daily to a maximum of 10,000 barrels, was to have gone into effect Nov. 1. However, protests from operators in the area, an extension of the Rodessa field, resulted in suspension of proration.

Boggess Elected Safety Chairman

CHICAGO, Nov. 1. — H. W. Boggess, Sinclair Prairie Oil & Gas Co., Tulsa, was elected general chairman of the Petroleum Section, National Safety Council at the 26th Congress and Exposition held recently at Kansas City.

J. H. Brown, Tide Water Oil Co., New York, was elected vice-chairman; F. R. McLean, Socony-Vacuum Oil Co., Inc. White Star Division, Detroit, news letter editor; and H. N. Blakeslee, American Petroleum Institute, New York, was re-elected secretary.

Newly elected chairmen of the various committees are:

Engineering, E. D. Murphy, Mid-Continent Petroleum Corp., Tulsa.

Health, P. E. Keegan, Shell Oil Corp., Houston.

Program, A. W. Breeland, Lone Star Gas Co., Dallas.

Publicity, J. L. Risinger, Magnolia Petroleum Co., Dallas.

Statistics, J. W. Meyers, Standard Oil Co. (New Jersey), New York.

Visual education, C. A. Miller, The Texas Co., Houston.

Atlantic Division, L. C. Woodbridge, Socony-Vacuum Oil Co., New York.

Great Lakes Division, R. T. Henderson, Standard Oil Co. of Ohio, Cleveland.

Gulf Division, William Grant, Jr., refining department, Humble Oil & Refining Co., Baytown, Texas.

Mid-Continent, J. D. McCamey, The Carter Oil Co., Tulsa.

Pacific Division, C. J. Nobmann, Shell Oil Co., San Francisco.

Rocky Mountain, R. O. Traylor, Standard Oil Co. (Indiana), Casper.

Calif. Meeting Nov. 16 To Have Six Papers

LOS ANGELES, Oct. 30. — Members of the California Natural Gasoline Assn. will meet for the annual review of developments in the industry Nov. 16, at the Ambassador hotel, Los Angeles.

Arrangements for the convention are under the chairmanship of B. Douglass Balthis, program chairman of the association and vice president of Natural Gas Equipment, Inc.

The meeting will have six technical papers, a luncheon and a banquet. It is expected 750 members and guests will attend.

The morning session will include presentation of four papers:

"Metering Gasoline by Positive Displacement Methods," T. R. Beauchamp, The Texas Co.

"Truck Gauging," Warren Kraft, Honolulu Consolidated Oil Co.

"Physical Constants," D. A. Smith, Tide Water-Associated Oil Co.

"Liquefied Gas," C. L. McCartney, Petrolane Corp.

Lester C. Uren, professor of petroleum engineering at the University of California, will head the afternoon session with a paper "A Discussion of Present Trends and Future Prospects of the Natural Gas Industry in California."

Henry Wade, Parkhill-Wade Co. and the Stearns-Roger Manufacturing Co., Denver, will speak on "Polymerization".

With dinner at 7 p.m., the period between the close of the afternoon session and the banquet will be given over to informal discussion of topics of mutual interest.

The technical sessions chairman is Clare Gard, Union Oil Co., J. C. Burks, president of the C. N. G. A., will preside at the banquet.

Oct. 16 Crude Stocks 307,897,000 Bbls.

WASHINGTON, Nov. 1.—Another drop in crude stocks was registered during the week of Oct. 9-16, according to the Bureau of Mines. Stocks on Oct. 16 as 307,897,000 barrels compared with 309,009,000 on Oct. 9. Stocks on Oct. 17, 1936, nearest comparable date last year, were 292,538,000 barrels.

Stocks by grades on Oct. 9 and 16, showing changes, follow:

(Thousands of Barrels)

Grade	Oct. 9	Oct. 16	Chge.
Penna. grade	4,269	4,264	— 5
Other Appal.	898	851	— 47
Lima-N. E. Ind.-Mich..	1,374	1,372	— 2
Ill.-S. W. Ind.	9,633	9,473	— 160
N. La. & Ark.	9,939	9,716	— 223
W. Tex. and S. E. N. M..	31,914	31,731	— 183
East Texas..	25,078	25,260	+ 182
Oth. Mid-Con.	128,359	128,453	+ 94
Gulf Coast..	25,896	25,591	— 305
Rocky Mts...	23,533	23,555	+ 22
California ..	26,139	25,831	— 308
Foreign	3,027	2,800	— 227
Rep't'd wkly.	290,059	288,897	—1,162
*Unreported	18,950	19,000	+ 50
Total	309,009	307,897	—1,112

*Estimated.

ATLANTA, Nov. 1. — Gov. Gordon Browning's statement favoring a lower gasoline tax in Tennessee was endorsed in a resolution adopted at the recent Interstate Conference on Automotive Taxation in Atlanta.

Four Companies Reduce Gasoline

(*Continued from page* 11)

rest of the Indiana territory. Competitive conditions were given as the reason for the change.

Tank Car Price Reduction

Socony-Vacuum Oil Co., Inc., effective Nov. 2, reduced tank car prices for all grades of gasoline one-half cent throughout New York and New England, with certain exceptions. The company announced the new consumer tank car and undivided dealer tank wagon prices in metropolitan New York are eight and nine cents respectively.

Standard of Ohio's tank car price reductions on U. S. motor gasoline and above 65 octane number gasoline totaling one-quarter cent followed similar reductions for 70-72 octane number gasoline in the Oklahoma market.

Mid-Continent spot markets generally declined one-eighth to one-quarter cents per gallon the past week, with the higher octane gasolines receiving the heavier cuts. U. S. Motor gasoline prices declined earlier in October, a customary seasonal drop.

A reduction in the U. S. motor gasoline price was also made in the Pennsylvania lower field, where refiners generally sold tank car the past week at 5.375 cents per gallon f.o.b. the field, exclusive of taxes. Prices on gasoline were firm in western New York state. Gasoline of above 65 octane number also declined one-quarter cent in the lower field, ths gasoline selling mostly into Ohio points.

As the week closed gasoline tank car prices were generally at 7.5 cents at Norfolk, Wilmington and Charleston terminals, down one-quarter cent. The reduction was made to place these terminals on a competitive basis with seaboard terminals immediately north and south of the three points, it was said.

As these changes brought about adjustments in the domestic markets, one flurry occurred in export circles as reports from usually reliable sources said that 110,000 drums of 71-74 octane aviation gasoline had been sold to the Chinese government at prices from 8.5 to 10 cents per gallon f.o.b. the Gulf. These shipments from the Gulf will bring the material past the doorstep of Pacific Coast refiners, who looked askance this week at the reported sale, it was said.

Private Industry Brought Today's High Living Standard, Teagle Tells

N. P. N. News Bureau

NEW YORK, Nov. 1.—Individual initiative and the stimulus of reward developed American industry and carried our standard of living far ahead of any other standard existing today, Walter C. Teagle, Standard Oil Co. of New Jersey board chairman, told a radio audience last week on a coast-to-coast network program.

As for the future of industry, Mr. Teagle acknowledged mistakes have been made and posed the question; "Do we want to tear down our house because it may need a few shingles? Rather, let us preserve what we have achieved and go forward to new accomplishments not possible outside of the freedom that is so peculiarly America's heritage."

Teagle's address was on the U. S. Department of Commerce weekly series, "Stories of American Industry" presented through co-operation of the Business Advisory Council.

His address compared living conditions in "grandpa's" days with those of today—the kerosine light, horses for power, the Saturday night bath with water from back of the stove against today's electric lights, oil burners for heat, automobiles, and newspapers and radios bringing news daily to the farmer's home.

Teagle referred to the thousands of years required to develop the wheel and said: "We added more years and comforts to our lives in a single generation that our forefathers did over centuries."

Present wealth is not the result of natural change or one new discovery, he continued, but due to the advance of industry along a broad front. "Industry enables us to live better on eight hours' work, against 12 to 15 hours' work by our grandparents," Teagle said, "with so many labor saving devices our problem seems to be the finding of things to do during leisure, he said, against our grandparents' problem of finding time for recreation and rest."

Pays Extra Dividend

CHICAGO, Nov. 1. — Directors of Standard Oil Co. of Indiana Oct. 29 voted an extra dividend of 75 cents a share, payable Dec. 15 to stockholders on record Nov. 15. On Sept. 15 the company paid an extra dividend of 25 cents a share, as well as the regular quarterly dividend of 25 cents.

DAILY AVERAGE PRODUCTION IMPORTANT DISTRICTS
American Petroleum Inst. Figures

	Week Ended Oct. 30 Barrels	Week Ended Oct. 23 Barrels
Oklahoma City	141,150	141,050
Total Okla....	586,750	589,800
East Texas...	482,950	482,000
Total Texas...	1,470,800	1,466,450
Rodessa	45,200	44,300
Total La.....	244,000	244,700
California	697,000	704,300
E. of Rockies..	2,905,950	2,909,000
Total U. S.....	3,602,950	3,613,300
Crude imports.	95,710	64,430
Tot. new sup'ly	3,698,660	3,677,730

Fenders Undented In Mass Driving

(*Continued from page* 9)

nor a dented fender. K. R. Kingsbury, president of the company, in commenting on the gathering said, "I had a wonderful time at the Frolic, but most gratifying of all was the fact that no one was hurt in automobile accidents going to or from Santa Cruz."

The company has also issued a pamphlet designed to assist motorists in getting the greatest degree of safety and comfort out of driving.

It urges constant attention to driving and says, "If you will seriously do your part, you will make driving a business — a full-time job, when behind the wheel. You will not permit your mind to be lured from the business of driving by private distractions, worry, day-dreams, something on the roadside, or an interesting passenger."

"In short", the pamphlet says "you will always do the things that will make the highways safe and enjoyable for all, and that will make you and others proud of your good-driving ability."

As a follow up on this campaign for safer driving, Standard sent 1200 letters to principals of high schools and heads of universities and colleges, telling what had been accomplished at the Santa Cruz Frolic and asked them to broadcast safety appeals over the speaker systems at football games and other events.

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Burner Shipments Up For Sept.

WASHINGTON, Nov. 1. — American manufacturers shipped 96,909 distillate oil burners in September, compared with 55,071 in August, 67,223 in September 1936, and 52,338 in September 1935, according to the Census Bureau.

Nine months figures for 1937 show that shipments of this type of burners in the first three quarters of 1937 totaled 296,125, compared with 222,285 in the same period of 1936, and 118,170 in 1935.

Technologists to Dine Nov. 10 in Chicago

TULSA, Oct. 29.—The Institution of Petroleum Technologists will hold a dinner meeting during the American Petroleum Institute convention in Chicago, in the Stevens hotel at 6 p. m., Nov. 10.

The speaker will be B. G. Smith, Anglo-Iranian Oil Co., London, on "Co-operation in Research and Development Work."

The arrangements committee is Carey Wagner, Pure Oil Co.; Gustav Egloff, Universal Oil Products; and Dr. C. K. Francis, Oil & Gas Journal.

Synthetic Chemistry and Nationalisms

By ARCH L. FOSTER, Technical Editor

● Truly, necessity is not only the mother of invention, but father and the whole family to the third and fourth generation!

Italy has been engaged in Herculean efforts for some years, to make itself nationally independent of the outside world, especially in the field of fuels and lubricants. The German Borsig interests sold an Italian company, the Azienda Nazoinale Idrogenazione Combustibili, or A.N.I.C., two plants for hydrogenation of hydrocarbons, presumably the Farbenindustrie process, with which Standard Oil Co. of New Jersey is associated in this country. The A.N.I.C. is charged by the Italian government with this problem of synthetic fuel production. It will offer to its stockholders the "chance" to increase their subscriptions, as it is understood the fields of lubricants and other oils are to be investigated.

Two large plants will soon be operating, at Bari and at Leghorn, advices say. Their capacities are unknown, but it is reported that their production when under full operation will supply one-third the motor fuel requirements of the country. Just what substance is to be used as raw material has not been divulged. Italy has no coal or petroleum resources to speak of, and if ravished Ethiopia contains such deposits in commercial quantities, they have been discovered since a British promoter was forced to give up a concession for exploratory purposes, two years or so ago. Without one raw material or the other, it is difficult to see how Italy can become economically independent, no matter what process may be licensed.

Then methyl or wood alcohol has been forced on consumers as a substitute for petroleum motor fuels. Ammonia has been publicized in the press as a fuel par excellence as used in a newly-designed motor. With this last practically the entire fuel mixture would be derived directly from the air, requiring only hydrogen from any other source. A great idea—if it works.

Germany's strenuous efforts to produce motor fuels from coal, of which she has a huge supply, are well known. Returning travelers say that technically the German developments are highly successful; economically they cannot yet be made to pay their way. Presumably the Italian, French and other projects are in the same situation.

Subsidies are the only recourse of a country which cannot meet the economic demands of an industry. And subsidies are paid by only one group—the people of that country, the ultimate consumer; no other group *can* pay it. Both France and Italy have passed regulations which require certain motor fuel consumers to utilize wood gas or some other product made within the home country.

Italy has a "Five Year" plan to subsidize or aid in experimental research for the production of synthetic rubber, to the extent of 3,000,000 lire per year for a period of five years beginning with 1937-38.

We cannot but wonder from what source a people will obtain the money to subsidize an uneconomic industry in the name of nationalism over an indefinite period, and how long they may be willing to shoulder this added burden for which there can exist only political reasons?

Refining Technology

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Influence of Silicon Additions On High Temperature Characteristics Of 4-6% Chromium-Molybdenum Steels

By C. L. CLARK[1] and MARTIN FLEISCHMANN[2]

IT IS generally recognized that for a steel to render suitable service at elevated temperatures it must possess the following characteristics:

1. Sufficient strength or load-carrying ability to resist the applied stress for the desired time period.
2. Satisfactory resistance to the attack of the liquid or gases with which it is to be in contact.
3. Retention of suitable ductility and impact properties, both at room and elevated temperatures, under the given operating conditions.

In other words, strength is not the only criterion in determining the merits of a steel for a given application.

Strength at elevated temperatures is generally imparted to a steel by the addition of carbide-forming elements, such as chromium, molybdenum, tungsten and vanadium. Oxidation and corrosion resistance is attained through the addition of certain elements which dissolve in the ferrite, as chromium, silicon and aluminum. Chromium, and to some extent aluminum and silicon are effective in increasing the resistance to attack by sulphides. Silicon, especially in combination with chromium, greatly improves the oxidation resistance.

Silicon is an element which has received too little attention insofar as its influence upon the high temperature properties is concerned. When the true value of this element is recognized it will be present in relatively large amounts in the majority of steels used for high temperature service. The results presented in this paper substantiate this belief.

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Conclusions

The results presented in this paper clearly demonstrate the beneficial influence of an increased silicon content, of the order of 1.5%, on the high temperature characteristics of the 4-6% Cr + Mo type steels.

Silicon, in this amount, certainly increases the surface stability, at least with respect to oxidizing conditions, and the structural stability and thus indirectly improves the load-carrying ability and the ductility up to fracture at the more elevated temperatures.

Steels Investigated

Two steels were considered, both of which were of the 4-6% Cr + Mo type, and differed only in that one contained

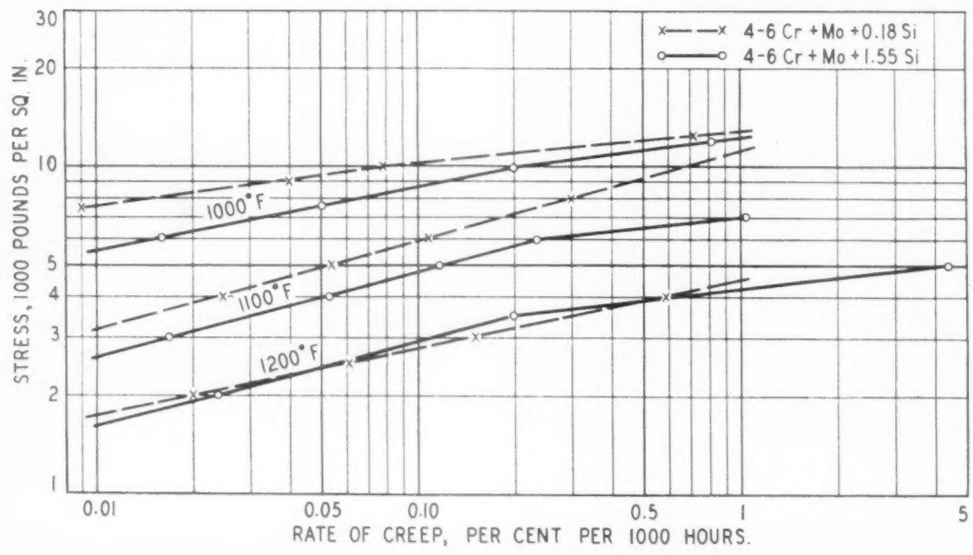

Fig. 1. Stress-creep rate characteristics for two 4-6% Cr + Mo steels containing 0.18 and 1.55% silicon, respectively

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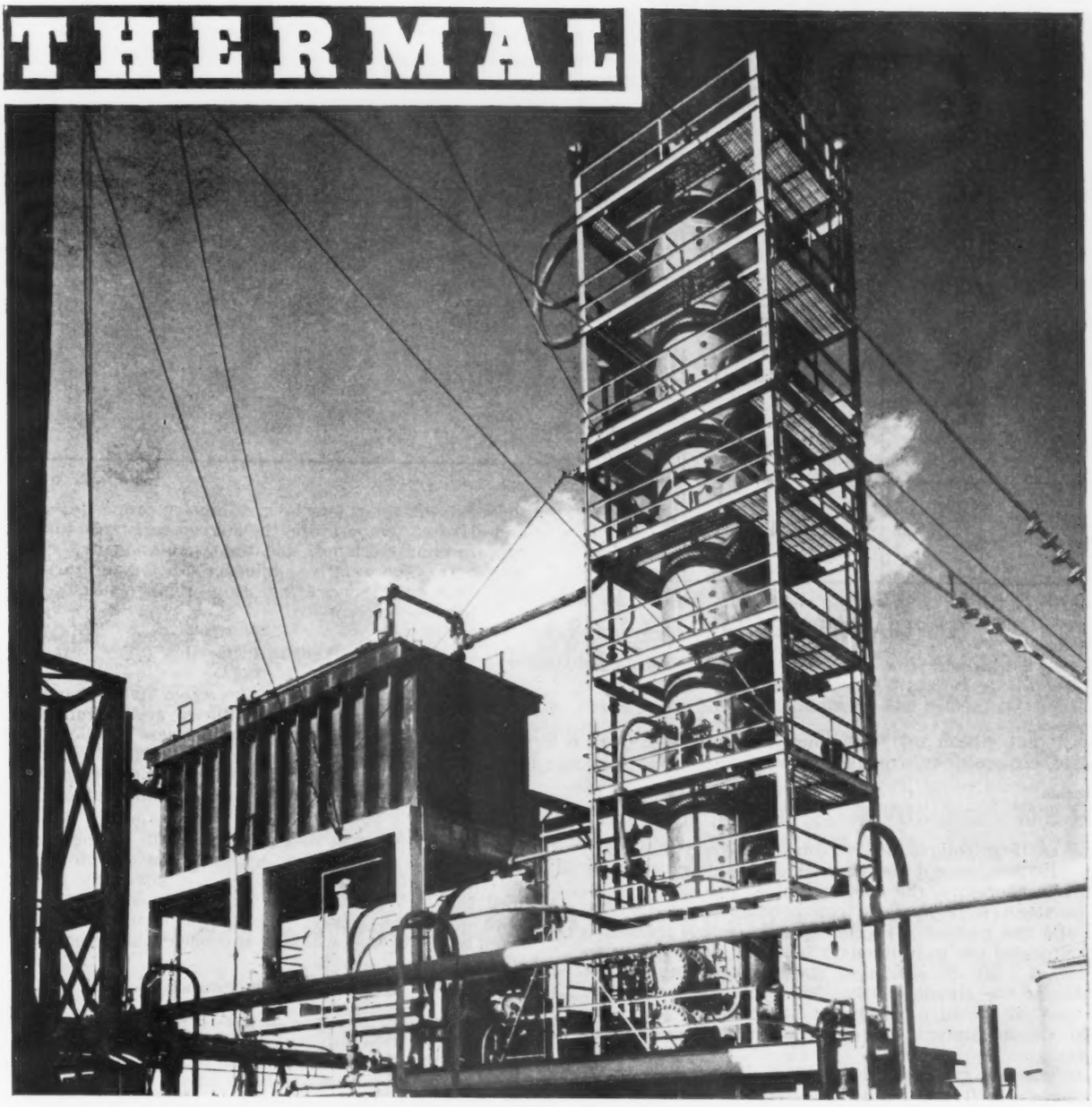

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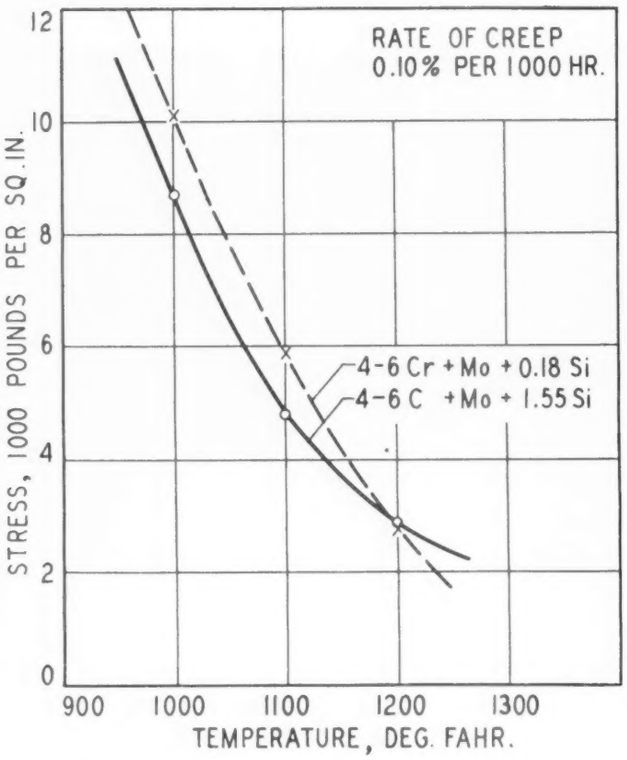

Fig. 2. Creep characteristics of two 4-6% Cr + Mo steels containing 0.18 and 1.55% silicon, respectively

0.18 per cent silicon and the other 1.55 per cent. Their complete compositions are as follows:

Designation	C	Mn	Si	Cr	Mo	P	S
4-6% Cr + Mo	0.10	0.45	0.18	5.09	0.55	0.017	0.015
4-6% Cr + Mo + Si	0.10	0.38	1.55	4.83	0.51	0.009	0.016

Insofar as their composition is concerned both steels are nearly identical, except for their silicon content, and this element is, therefore, the chief variable.

The steels were made in commercial electric-arc furnaces and the necessary specimens were taken from hot-rolled annealed one-inch diameter bars. An annealing temperature of 1550° F. was used and the resulting Brinell hardness of the standard 4-6% Cr + Mo steel was 128, while that of the high silicon modification was 156. Increased silicon content, therefore, slightly increases the hardness.

The inherent grain size of the low silicon type was 7, thus classifying it as a fine-grained steel, while that of the high silicon steel was 4 to 5, indicating it to be coarse grained. The actual grain size of the two steels in the annealed condition was approximately the same and both were highly spheroidized, a condition which is typical for steels containing this amount of chromium.

Comparative Physical Properties

The properties of these two steels are compared on the basis of their tensile and impact properties at room and elevated temperature, their creep resistance and stress-rupture characteristics, and their oxidation and corrosion resistance. The relative influence of temperature, stress and time on the resulting room temperature properties were likewise determined.

TABLE II

Comparative high temperature impact characteristics of two 4-6% Cr + Mo steels containing 0.18 and 1.55% silicon

Temperature Deg. F.	Silicon %	Charpy Impact, Ft.-Lb., after Designated Holding Times: 1 Hour	1000 Hours
80	0.18	81.3	...
	1.55	69.3	...
500	0.18	68.7	77.0
	1.55	...	...
600	0.18	72.5	80.5
	1.55	...	...
750	0.18	75.0	73.3
	1.55	...	...
900	0.18	64.5	52.0
	1.55	...	...
1000	0.18	58.7	61.0
	1.55	59.0	53.0
1100	0.18	54.3	56.0
	1.55	56.0	56.0
1200	0.18	53.7	40.0
	1.55	51.0	45.5
1300	0.18	...	...
	1.55	50.0	45.5
1400	0.18	...	...
	1.55	46.5	44.0
1500	0.18	...	...
	1.55	42.5	34.5

Tensile Properties

The tensile properties of these two steels at both room and certain elevated temperatures are summarized in Table I. At room temperature the increase in silicon content has raised, to a marked degree, the strength characteristics (tensile strength, yield stress and proportional limit) without appreciably decreasing the ductility values (elongation and reduction of area).

At temperatures in excess of 1000° F. the increased silicon content somewhat decreases the tensile strength, but the yield stress values are not adversely influenced until 1400° F. is attained. The increased silicon content does, however, greatly increase the ductility at the elevated temperatures, which is of considerable importance.

Impact Resistance

Likewise, in the case of the Charpy impact resistance it was found that an increase in the silicon content from 0.18 to 1.55% lowered the room temperature values to a slight extent, the decrease being about 12 foot-pounds, but had no detrimental influence on the resistance at the elevated temperatures. In fact the results, given in Table II, show the high silicon type to have good resistance to impact after exposure times of 1000 hours at temperatures as high as 1500° F.

At temperatures of 1000°, 1100° and 1200° F. the two steels may be considered as having the same degree of resistance to shock. Above 1200° F. the lower silicon steel

TABLE I

Comparative tensile properties of two 4-6% Cr + Mo steels containing 0.18 and 1.55% silicon respectively

Temperature Deg. F.	Silicon %	Tensile Strength Lb./Sq. In.	Yield Stress Lb./Sq. In. 0.1%	0.2%	Proportional Limit Lb./Sq. In.	Elongation % in 2 In.	Reduction of Area %
85	0.18	66,575	25,400	26,250	19,000	39.0	80.5
	1.55	82,100	45,000	45,000	36,250	38.8	76.2
1000	0.18	44,465	16,750	17,300	7,500	28.5	73.5
	1.55	45,500	24,250	25,625	15,000	42.75	83.6
1100	0.18	34,375	14,900	15,400	6,000	38.75	87.3
	1.55	33,575	18,000	20,250	8,000	58.5	89.95
1200	0.18	25,800	11,000	11,300	1,500	46.0	91.0
	1.55	24,000	13,750	15,000	5,500	70.75	93.65
1300	0.18	19,000	8,650	9,500	.....	65.0	94.55
	1.55	15,000	9,000	10,000	.....	79.0	95.65
1400	0.18	13,275	6,500	7,250	.....	65.0	95.9
	1.55	10,340	4,875	5,750	.....	101.0	97.6

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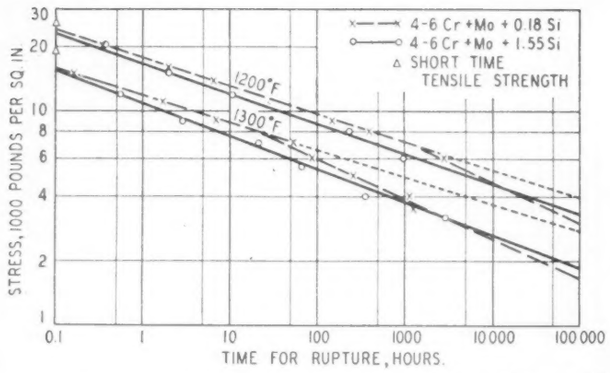

Fig. 3. Stress-rupture characteristics at 1200° and 1300° F. of two 4-6% Cr + Mo steels containing 0.18 and 1.55% silicon, respectively

specimens were badly oxidized, especially during the 1000-hour heating period, and the impact values influenced to such an extent that they are not included. On the other hand, the specimens of the higher silicon steel were hardly attacked by the hot gases even at 1500° F.

Creep Characteristics

Standard 1000-hour single-step creep tests were conducted on both of these steels at 1000°, 1100° and 1200° F. The resulting creep characteristics are summarized in Table III and shown graphically in Figs. 1 and 2.

At temperatures of 1000° and 1100° F. it is apparent that the increased silicon content has decreased to some extent the resulting creep strength for each of the deformation rates considered. At 1200° F., however, the increased silicon content has been without influence on the stress for the lowest creep rate, 0.01 per cent per 1000 hours, and has slightly raised the stress for the higher creep rates. In fact, the curves of Fig. 2, based on a creep rate of 0.10 per cent per 1000 hours, indicate that the increased silicon would be even more beneficial at the more elevated temperatures.

The question now arises as to the temperatures at which the higher creep resistance is of the greater importance. In the case of many applications, such as cracking tubes for oil refinery service, it is generally agreed that the greater creep resistance is required at those temperatures encountered during the latter part of the operating cycle and which may be considerably above the normal operating temperature. Under these conditions an increase in the silicon content of the 4-6% Cr + Mo steel to 1.50% would be advantageous rather than detrimental insofar as the creep resistance is concerned under operating conditions

Rupture Strength

While it is common practice to base high temperature design stresses on the creep characteristics at the corresponding temperature, the present-day standardized creep test possesses certain limitations. This is especially true for those applications in which visual deformations are permissible and in which, in many cases, the life of the part is determined by a fixed, but relatively large, amount of extension. For example, reported creep results give no indication as to the amount of deformation a steel will undergo before actual fracture results. Neither do they clearly demonstrate the steel's surface stability under the combined action of time, temperature and stress.

It is believed that stress-rupture tests, which have been described in previous publications by one of the authors†, ‡, should be used, at least in a supplementary capacity to creep tests, to fully determine the high temperature properties of a given steel. The results from tests of this type

† "The Fracture of Carbon Steels at Elevated Temperatures," Trans. A. S. M., 1937, Vol. XXV, No. 3, pp. 863-885.

‡ "The Rupture Strength of Steels at Elevated Temperatures," A. S. M. 1937 Annual Convention.

TABLE III

Comparative creep characteristics of the 4-6% Cr + Mo steel containing 0.18 and 1.55% Silicon

Designation	Temperature Deg.F.	Stress for Designated Creep Rate Rate = % per 1000 Hours	
		0.01	0.10
4-6% Cr + Mo + .18% Si	1000	7600	10,100
4-6% Cr + Mo + 1.55% Si	1000	5450	8,700
4-6% Cr + Mo + .18% Si	1100	3200	5,850
4-6% Cr + Mo + 1.55% Si	1100	2600	4,800
4-6% Cr + Mo + .18% Si	1200	1700	2,800
4-6% Cr + Mo + 1.55% Si	1200	1600	2,900

are dependent not only on the strength or load-carrying ability of the steel but upon its surface and structural stability as well. Furthermore, the fractured specimens give the ductility up to rupture and thus indicate the degree of deformation the steel will undergo before actual failure occurs.

Fig. 3 is included as representative of the influence of an increase in the silicon content on the stress-rupture characteristics at 1200° and 1300° F. It will be noted that in the case of the higher silicon steel the results are expressible by a single straight line at each of the two temperatures. This is an indication of the high surface stability under the given test conditions. With the lower silicon steel a break occurs in this straight-line relationship, thus indicating that pronounced oxidation has occurred.

For the shorter fracture times the lower silicon steel possesses a greater rupture strength than the higher silicon modification. For the more prolonged times, however, this condition is reversed, thus again indicating the advisability of a higher silicon content for service at the more elevated temperatures.

Fig. 4 sets forth the ductility characteristics of the fractured specimens at 1200° F. and shows the ductility of the higher silicon modification to remain practically constant as the fracture time is extended from a few minutes to 1000 hours. With the standard 4-6% Cr + Mo steel, however, a marked decrease occurs in the ductility with increasing fracture times. This again shows the greater stability, both with respect to surface and structure, of the higher silicon steel and indicates that it would deform to a considerably greater extent before actual failure occurred.

As is evident from the values given in Table IV a fairly definite relationship exists for these two steels between the creep and the stress-rupture characteristics. In the case of the lower silicon steel, the ratio between the stress required for a creep rate of 0.01 per cent per 1000 hours and stress required for fracture in 100,000 hours ranges from

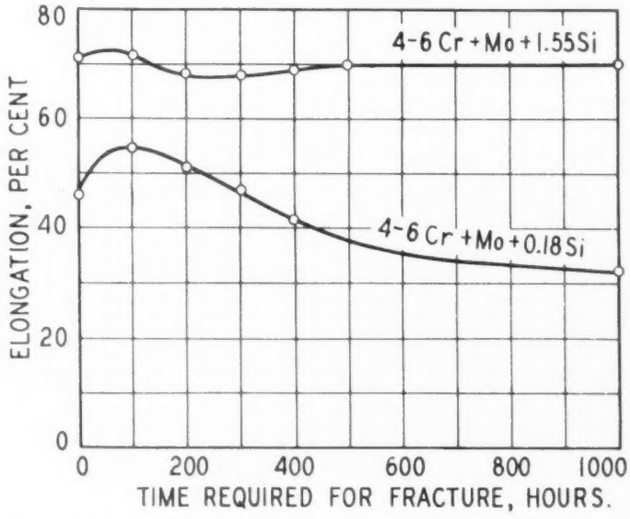

Fig. 4. Influence of time at 1200° F. on the ductility characteristics of two 4-6% Cr + Mo steels containing 0.18 and 1.55% silicon, respectively

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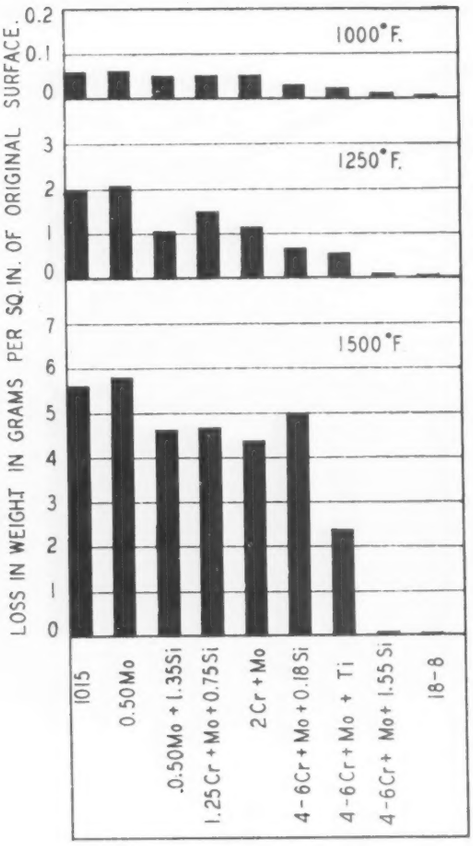


Fig. 5. Comparative oxidation resistance of designated steels at indicated temperatures

0.471 to 0.567. With the higher silicon steel, the variation in this corresponding ratio is from 0.481 to 0.545. In other words, it appears that for these two steels one-half of the rupture strength (based on 100,000 hours) is approximately equal to the stress required for a creep rate of 0.01 per cent per 1000 hours.

Oxidation Resistance

The greatly improved resistance to oxidation imparted by an increased silicon content in the 4-6% Cr + Mo type of steel is illustrated in Fig. 5. Even at 1500° F. the 4-6% Cr + Mo steel containing 1.55% silicon oxidized very little under the exposure time of 1000 hours. In fact, under the given test conditions it compares favorably in this respect with the 18% chromium-8% nickel steel. The results from several other steels are also included in this figure for comparative purposes.

Not only does increased silicon content greatly improve the resistance to surface oxidation but it also retards the intergranular oxidation which occurs in most

TABLE IV

Relationship between creep and stress-rupture characteristics for 4-6% Cr + Mo steels containing 0.18 and 1.55% silicon

Temperature Deg. F.	Creep Strength 0.01%/1000 Hr.	Rupture Strength for Fracture in 100,000 Hrs.	Ratio of Creep Strength to Rupture Strength
	4-6% Cr + Mo + .18% Si		
1000	7600	14,500	0.524
1100	3200	6,800	0.471
1200	1700	3,000	0.567
1300	....	1,600	....
	4-6% Cr + Mo + 1.55% Si		
1000	5450	10,000	0.545
1100	2600	5,400	0.481
1200	1600	3,150	0.508
1300	....	1,850	....
1500	....	470	....

steels at the more elevated temperatures under the combined action of stress and time. The improved resistance to both of these types of attack at 1300°F. is shown in the two photomicrographs of Fig. 6. Even though the higher silicon steel required nearly three times as long for fracture it shows only a very slight surface attack and no intergranular attack. The lower silicon steel, on the other hand, possesses a relatively heavy oxide layer and considerable intergranular attack has occurred as well.

The microstructures of Fig. 6 likewise show the grain size of the lower silicon steel to have coarsened considerably under the given test conditions. The grain size of the 1.55% silicon steel, on the other hand, is still fine and comparable to that of the original structure. This would indicate the increased silicon content to have improved the structural stability.

Corrosion Resistance

It is difficult to indicate, on the basis of laboratory tests, the corrosion resistance of steels under actual operating conditions. Tests of this type were not, therefore, conducted on these steels.

Service results, however, definitely indicate that the increased silicon content is not detrimental in this respect and that under many conditions an improvement results. Additional data must be accumulated before the true merit of the influence of increased silicon content on corrosion resistance can be determined.

High Temperature Stability Under Stress

The stress-rupture tests previously considered showed that increased silicon content greatly improved the surface and structural stability at elevated temperatures under the combined action of stress, time and temperature. Room temperature physical tests on the completed creep specimens afford a convenient means of determining the influence of these same three factors on the resulting room temperature characteristics.

Stability of Tensile Properties

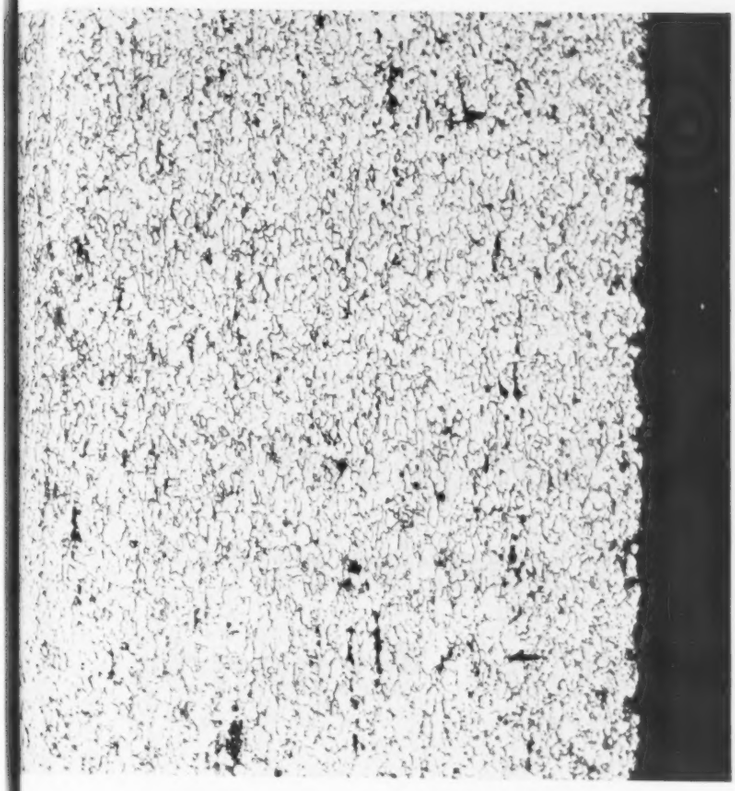
The results obtained from room temperature tensile tests on the completed creep specimens are given in Table V. From these values it is apparent that the tensile prop-

TABLE V

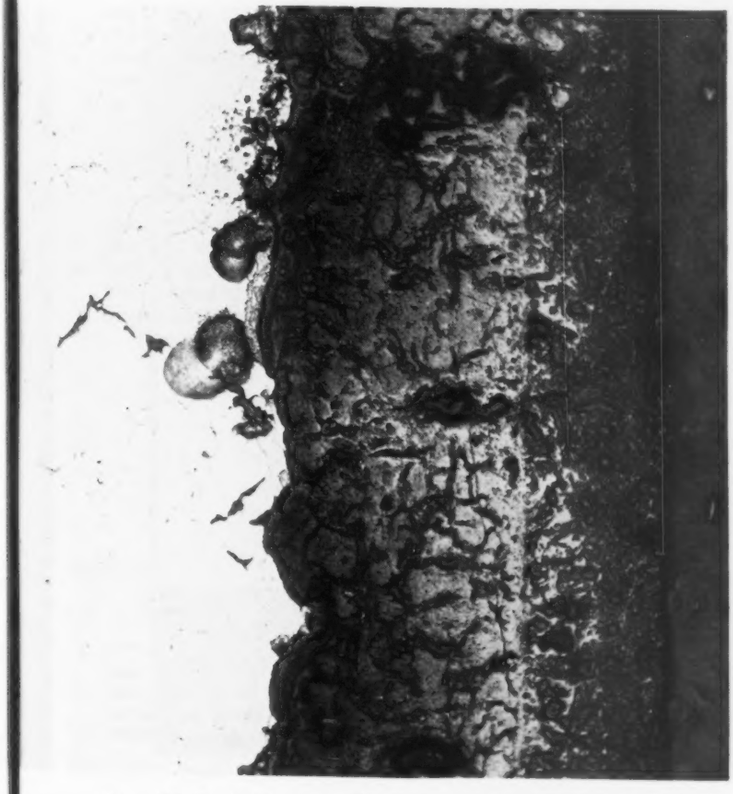
Influence of increased silicon content on the room temperature tensile properties before and after the high temperature creep tests

Previous Heating							
Temperature Deg. F.	Stress Lb./Sq. In.	Time Hr.	Tensile Strength Lb./Sq. In.	Yield Stress Lb./Sq. In.	Proportional Limit Lb./Sq. In.	Elongation % in 2 In.	Reduction of Area %
			4-6% Cr + Mo + .18% Si				
85	....	....	68,325	27,500	17,500	38.5	77.5
900	15,000	1140	68,000	29,000	17,500	37.5	80.4
900	20,000	1080	67,800	35,000	20,000	35.0	76.4
1000	10,000	1460	67,100	27,500	20,000	38.5	77.4
1000	12,500	1010	66,900	29,000	22,500	39.0	79.1
1100	4,000	1050	77,150	26,250	13,500	38.0	77.0
1100	5,000	1020	77,450	26,750	15,000	36.0	76.0
1200	2,000	1010	63,750	25,000	15,000	37.0	76.0
1200	2,500	1020	65,000	34,000	15,000	35.5	75.3
			4-6% Cr + Mo + 1.55% Si				
85	....	....	82,100	45,000	36,250	38.75	76.2
1000	6,000	1035	81,500	50,000	30,000	37.5	72.7
1100	3,000	1000	79,875	48,000	35,000	36.5	71.6
1100	5,000	1000	80,750	50,000	35,000	38.5	71.6
1100	7,000	1020	79,125	44,500	32,500	37.5	72.4
1200	2,000	1145	81,000	47,500	40,000	38.5	72.3
1200	3,000	1210	79,750	50,000	42,500	38.0	74.1

Fig. 6. Microstructures of Surfaces of specimens fractured at 1300° F. (100X).



(a) 4-6% Cr + Mo + 1.55% Si — 3200 Lb. Stress — 2987 Hours



(b) 4-6% Cr + Mo + 0.18% Si — 4000 Lb. Stress — 1120 Hours

TABLE VI

Influence of increased silicon content on the room temperature impact resistance before and after high temperature creep tests

Temperature Deg. F.	Previous Heating Stress Lb./Sq. In.	Previous Heating Time Hours	Izod Impact* Ft.-Lb.
	4-6% Cr + Mo + .18% Si		
85	.....	....	92.0
900	13,000	1112	92.5
900	17,500	1140	89.5
1000	7,500	1215	91.0
1000	9,000	1010	93.0
1100	6,000	1000	80.0
1100	8,000	1020	87.5
1200	3,000	1040	91.0
1200	4,000	1040	91.0
	4-6% Cr + Mo + 1.55% Si		
85	.....	....	100.0
1000	10,000	1075	102.
1000	12,000	1115	99.
1100	4,000	1050	74.5
1100	6,000	1125	62.0
1200	4,000	1145	77.5
1200	5,000	1210	84.0

*Average of two tests.
Note: Specimens smaller than standard.

TABLE VII

Influence of Increased Silicon Content on the Linear Coefficient of Thermal Expansion of 4-6% Cr + Mo Steel

Temperature Deg. F.	Coefficient of Expansion, In./In./°F. 4-6% Cr + Mo + .18% Si	4-6% Cr + Mo + 1.55% Si
32	5.75×10^{-6}	6.03×10^{-6}
1000	8.75	8.47
1100	9.10	8.73
1200	9.45	8.99
1300	9.79	9.25

erties of neither the regular 4-6% Cr + Mo nor the higher silicon modification of this steel were appreciably influenced by the conditions of the creep tests. The combined action of time and stress at temperatures as high as 1200° F. does not therefore change the room temperature tensile properties.

Stability of Impact Resistance

The results from room temperature Izod impact tests on specimens machined from the completed creep specimens, given in Table VI, indicate both steels to have retained a high degree of shock resistance. That is, the combined action of temperature, stress and time has not had a detrimental influence in this respect on either steel. Increased silicon content does not, therefore, cause loss of impact resistance after prolonged heating at the temperatures included in our tests.

Structural Stability

Both of these steels were highly spheroidized in the annealed state and the carbides in this condition are very stable, even in the presence of large stresses, at temperatures up to 1300° F.

Under prolonged time periods, the grain size of the lower silicon steel coarsens at 1300° F. while that of the higher silicon steel does not, as illustrated in the photomicrographs of Fig. 6. This would indicate the high silicon addition to be beneficial in stabilizing the structure.

If surface stability, and especially the resistance to intergranular attack, is likewise considered then it is also apparent, from Fig. 6, that the increased silicon content is distinctly beneficial.

Coefficient of Thermal Expansion

Since both of these steels are of the pearlitic type, their coefficient of thermal expansion is approximately the same, as is evident from the values given in Table VII. The increased silicon content has slightly reduced the coefficient values at the elevated temperatures but the changes are of a small order of magnitude.

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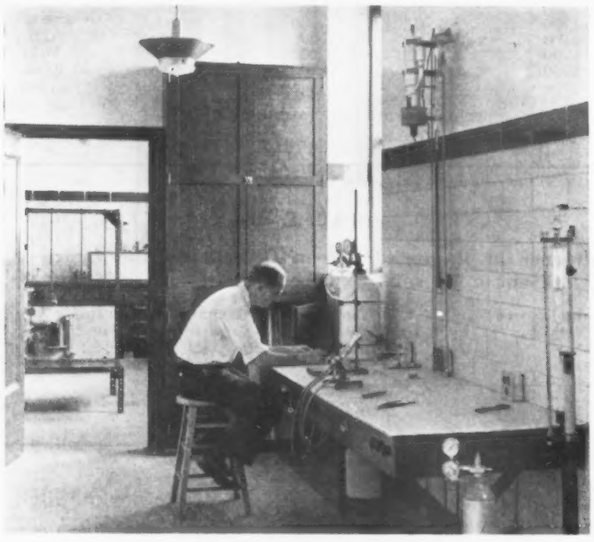

A corner of one of the laboratories

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Bartlesville Experiment Station Expands

Newly dedicated and already embarked on an even more efficient program of investigation into problems arising in the production, transportation, refining, and use of petroleum products and natural gas, the Petroleum Experiment Station in Bartlesville is now one of the largest and best-equipped institutions of its kind in the world.

The Bartlesville station was established in 1918 by the U. S. Bureau of Mines and was the first for this type of research. The original two buildings and additional temporary buildings were outgrown in the next 15 years. Funds were allotted by the Public Works Administration in 1935 for erection of a new building. This building was accepted by the Bureau in January, 1937. Dedication took place in October. Present head of the station is N. A. C. Smith, supervising engineer, who directs the activities of 60 regular employes.

The new building includes the original administration building as one of the wings. The central part is 100 feet long and 50 feet wide. In this section on the second and third floors are the laboratories. The building also houses the administrative offices, a 5000-volume library, drafting room, heating and air-conditioning plant, and instrument shop.

The library has an atmosphere conducive to study. Over the fireplace is a tribute to Joseph A. Holmes, first director of the Bureau of Mines

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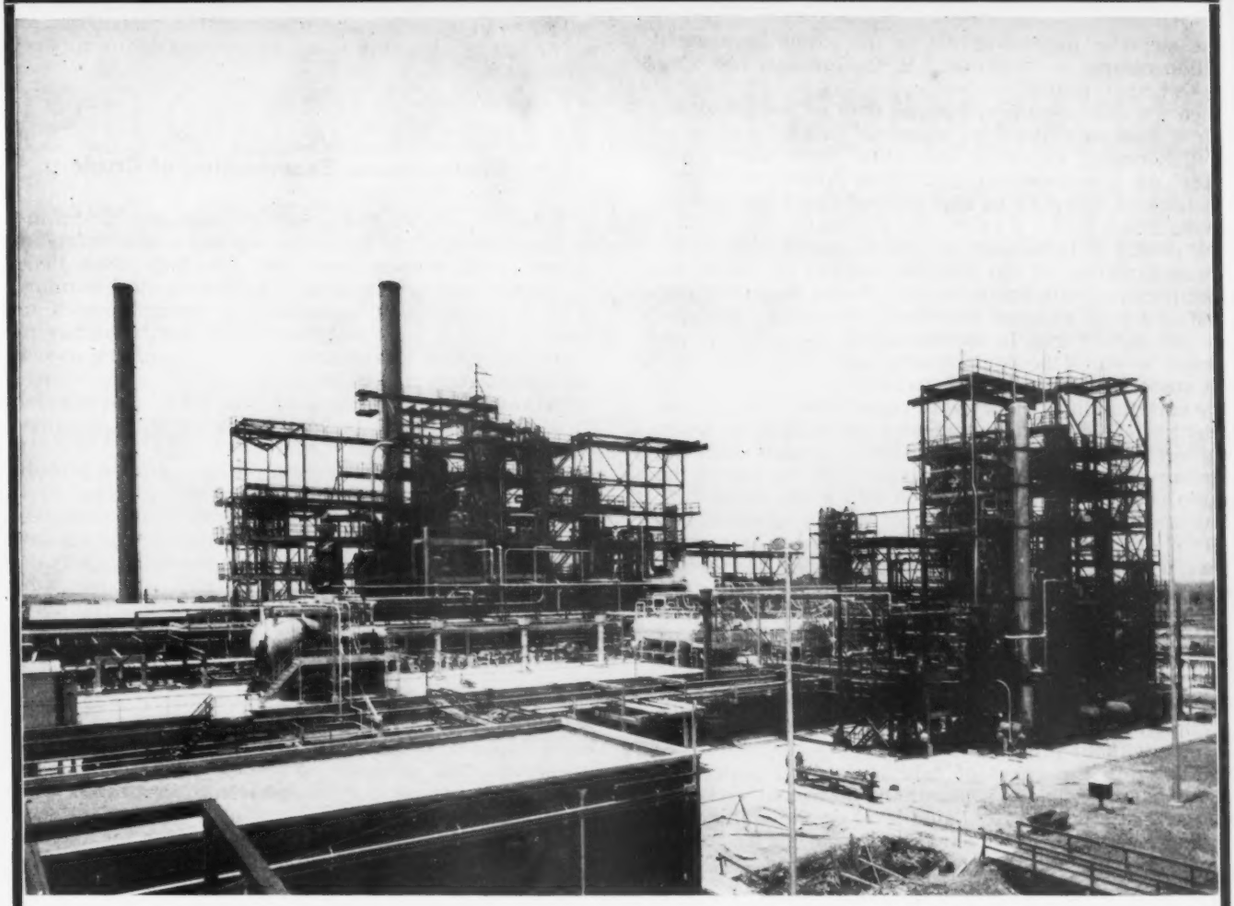

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IN THE WORLD'S CURRENT TECHNICAL LITERATURE

By M. G. VAN VOORHIS

Column Performance

The stepwise method of design for a multicomponent distillation column is confirmed. R. C. Gunness, Ind. Eng. Chem., Oct. 1937, p. 1092.

Need for additional performance data on the rectifying column is indicated by wide variations in information on plate efficiencies. Carefully conducted tests were made, therefore, on a commercial distillation column rectifying light petroleum fractions at high pressure and the data interpreted.

The results of these tests showed a quantitative experimental confirmation of the stepwise method of design for multicomponent distillation columns. It was found that the plate efficiency of gasoline stabilizers operating above 250 pounds per square inch is approximately 100% in the column tested in which the liquid flowing across the plates has several successive contacts with vapors.

The variation in efficiency with vapor velocity or molecular weight of the diffusing component was within the limits of accuracy of the determinations (10%). Based upon the assumption of only slight liquid mixtures on the plates, the Murphree point efficiency was about 80%. The stabilizing plant, which was at the Baton Rouge refinery of the Standard Oil Co. of Louisiana, was admirably suited to test work. All flows, with the exception of condenser water, were measured by recording orifice meters. The stabilizer was a 28-plate column 64 feet high with an internal diameter of 4 feet, 8¼ inches. There were 27 slotted cast-iron bell caps per plate and, neglecting crest, the weirs maintained a liquid level of 2½ inches on each plate. Distance between plates was 18 inches. The column was operated at a maximum vapor velocity of 0.23 feet per second and at 254 pounds per square inch without priming.

In analyzing the effect of column load on plate efficiency, it was impossible to separate the individual variables of vapor velocity, liquid rate, liquid level on the plates, and others, and to study each effect. Vapor velocity was, however, considered the most important variable.

* * *

Temperature Control Technique

Analytic approach to the problem of applying instruments to process control. E. D. Haigler, meeting of American Society of Mechanical Engineers, Erie, Pa., Oct. 4-6.

An analytical approach to the problem of application of instruments to process control is needed. A convenient system involves the following steps: definition of the problem, classification of equipment, modification of equipment in line with the factors favorable to precise control, selection of control system, and installation and operation avoiding unsystematic response.

Admittedly only qualitative, the approach is helpful in explaining control application problems. Further steps are necessary, particularly on the part of the instrument manufacturers. A great step forward will have been made when it becomes possible to specify quantitatively the controllability factors in process equipment, thus facilitating interchange of pertinent data between process equipment makers, instrument makers, control consultant, and user.

A classification of temperature controllers is suggested. Types include on-and-off, floating, proportional narrow-band, proportional wide-band, and proportional reset instruments. Also proposed is a classification which considers the controlled process equipment as types of heat exchangers. Industrial instruments have been found to be generally excellent as to materials and workmanship, installation standing or falling according to the correctness of the application.

* * *

Microscopical Examination of Crude

The microscope has produced some significant results on problems relating to the genesis of oil and correlation of crudes. J. M. Sanders, Jour. Inst. Pet. Tech., Sept. 1937.

Results and observations of a microscopical examination of crude petroleum of an exploratory nature make it apparent that there is sufficient material to justify further investigation along certain definite lines. One of the objects of the investigation was to aid in the solution of problems connected with the correlation of oils with reservoir formations or source deposits, and indirectly with questions of stratigraphical geology.

Evidence was found pointing to the extreme probability that spores and unicellular algae have contributed their waxy, fatty, resinous or oily secretions to the eventual petroleum complex, leaving only their decay-resistant integuments behind. Of special interest would be the study of the composition and chemistry of algal fatty components in order to discover the mechanism of their transformation into hydrocarbons.

The theory of Murray Steward that the crude oils of Burma owe their origin to the natural oil secreted by dipterocarpus trees, appears to receive some amount of confirmation from the results of the investigation. Further research could be made to trace the conversion of this oil to petroleum. The presence of resins in a large number of crude petroleums is another subject which invites further investigation.

A wide field for further research is open for application of the microscope to correlate data. The possibility of characterizing oils by means of the types of organism preserved by them, is suggested. Some results have been secured also by comparison of well cores with the oils derived from the same formation. This type of correlation could be carried further and microscopic examination of cores extended to the smaller fauna and flora, which in the routine method of examination frequently escape observation.

* * *

Paint Solvents

Solvent refining produces high grade paint solvents. E. H. McArdle, Chem. & Met. Eng., Oct., 1937.

For lacquer compositions and resin enamels, paint manufacturers cut their resin directly with a solvent. Choice, up to the past few years, has lain between a straight coal-tar and a petroleum thinner blended with an oxygenated solvent, such as an alcohol, acetate, or alcohol-ether. The latter has not been entirely satisfactory and an aromatic hydrocarbon solvent is preferred.

Development of synthetic resins has been aided by solvents and thinners from petroleum. Higher cost of ester gum, substituted for rosin, and of tung oil over linseed oil were balanced by the far lower cost of petroleum thinner as compared with turpentine. Demand for

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greater solvency about 10 years ago made refiners look to naphthas topped from naphthenic crudes. Thinners were finally displaced by true solvents on the arrival of hot-cut synthetics.

The resin solvency of a pure aromatic hydrocarbon is double that of the corresponding naphthene, four times that of the straight-chain paraffin, and about three times that of the highly branched paraffin. For cutting the most durable types of synthetic coating resins, at least three fourths of the solvency of the pure aromatic hydrocarbon is desirable.

To compete with coal-tar, petroleum refiners turned to the most aromatic hydrocarbon and refined out objectionable components. This last requirement eliminated naphthas derived from cracking. Several California refiners who were prepared early to solvent-refine naphthas for other requirements were able to furnish highly refined cuts in the toluene, xylene, and higher boiling ranges, with solvencies varying from 60 to 80% of those of coal-tar fractions.

Supply was plentiful and for general "high solvency" work the naphthas could replace mixtures of coal tar solvents and paraffinic thinners. Priced at roughly half the cost of coal-tar solvents, a considerable saving could be made. Immediate commercial application was delayed by the fact that most synthetic resin development was in the east and middle-west.

Hydrogenation as a source of aromatic naphthas proved more flexible than solvent extraction in the east and in the early 1930's hydrogenated naphthas approached coal tar solvency more closely than any petroleum naphthas yet produced. Demand quickly exceeded supply. Since 1934 improved technique in solvent extraction has enabled production of aromatic type solvents of the required boiling range and improved solvency.

Solvent plant facilities began producing three new grades in 1936. The No. 2 fraction possesses 93% of the solvency of industrially pure xylene, or over 100% that of coal-tar high-flash naphtha. No. 1 ranges from 75 to 85% of the solvency of 2° C. toluene.

* * *

Stability Test for Aviation Oil

Data for heating aviation oils without aeration at 350° F. correlate with service performance. O. C. Bridgeman and E. W. Aldrich, S.A.E. Journal, Oct. 1937.

In an investigation to find a suitable laboratory test method for stability of aircraft-engine oils, data obtained from heating oils without aeration at 350° F. was found to correlate satisfactorily with service performance in aviation engines of moderate output.

Some of the laboratory stability methods for automobile engine oils have been used without comparison with aviation data so that there has been little basis for evaluating methods. Availability of a significant laboratory test method would permit selection of the most stable oils quickly at little expense.

One of the major reasons why methods developed for determination of automobile engine oil stability have not been satisfactory for application to aviation oils is that these methods have used aeration whereas the concentration of oxygen in the crankcase of an aviation engine is relatively low. Also, most methods for automobile oils have been concerned with formation of insoluble material whereas, with good aviation oil, extremely little insoluble material outside of "blowby" carbon is formed in service.

Heating at 350° F. without aeration eventually will produce insoluble material and, although it may take longer to rate oils according to their sludging tendency by this method, it is believed the results will have much more significance than if attempts are made to expedite formation of insoluble material by use of aeration or higher test temperatures.

There is one theoretical objection to this method. In the engine, oil is oxidized and polymerized at a variety of temperatures while in the laboratory the temperature is constant. A preferable laboratory method appears to be one in which the oil is circulated and exposed to a wide range of temperatures in each cycle. A method of this type is now under investigation at the National Bureau of Standards.

In the present preferred type of test, oil was heated with the surface exposed to air without aeration. A similar test was conducted with aeration. Twenty-two oils were tested by the two laboratory methods and data obtained from 30-hour engine operation in a Pratt & Whitney Hornet engine. Laboratory tests without aeration were made in separate and continuous runs with each oil for 1-, 2-, 3-, 4-, and 6-day periods at 300, 350, 390, and 440 degrees F. Under aerating conditions the periods were ½, 1, 1½, and 2 days at 300, 350, and 390 degrees F.

The engine was operated at cruising speed (70 to 75% of rated power) for 30-hour runs on each oil. Runs were made in three 8-hour periods and one 6-hour period. In the engine runs, oil was consumed continually and make-up oil was added while no oil needed to be added in laboratory tests. All the engine data, therefore, was corrected for oil consumption and make-up in correlating laboratory tests.

Chemical Industry Gains in 1936

The chemical industry appeared to be unaffected in 1936 by any particularly new problems but the year was one of accomplishment in solving those presented in the preceding two years. World chemical developments in 1936 were so described by C. C. Concannon, chief, and A. H. Swift, chemical division of the Bureau of Foreign and Domestic Commerce, in a 240-page booklet just issued under that title.

Production of chemicals and allied products increased, sales were higher, consumption larger, but for the most part production was still considerably below capacity, it is pointed out. Domestic industry was not always prepared to take care of the expanded demand, however, and imports were made which otherwise would not have occurred.

In foreign chemical markets, so far as the United States was concerned, competition from Japanese and Russian products was not as important in 1936 as in 1934, except in a few isolated instances, but Germany did succeed in securing a larger part of the business in certain areas. All governments were interested in their chemical industries, gave aid in various ways, and established control frequently by limiting expansions, by restricting imports, and by tightening regulations regarding sales and advertising, especially with regard to medicinal and toilet preparations.

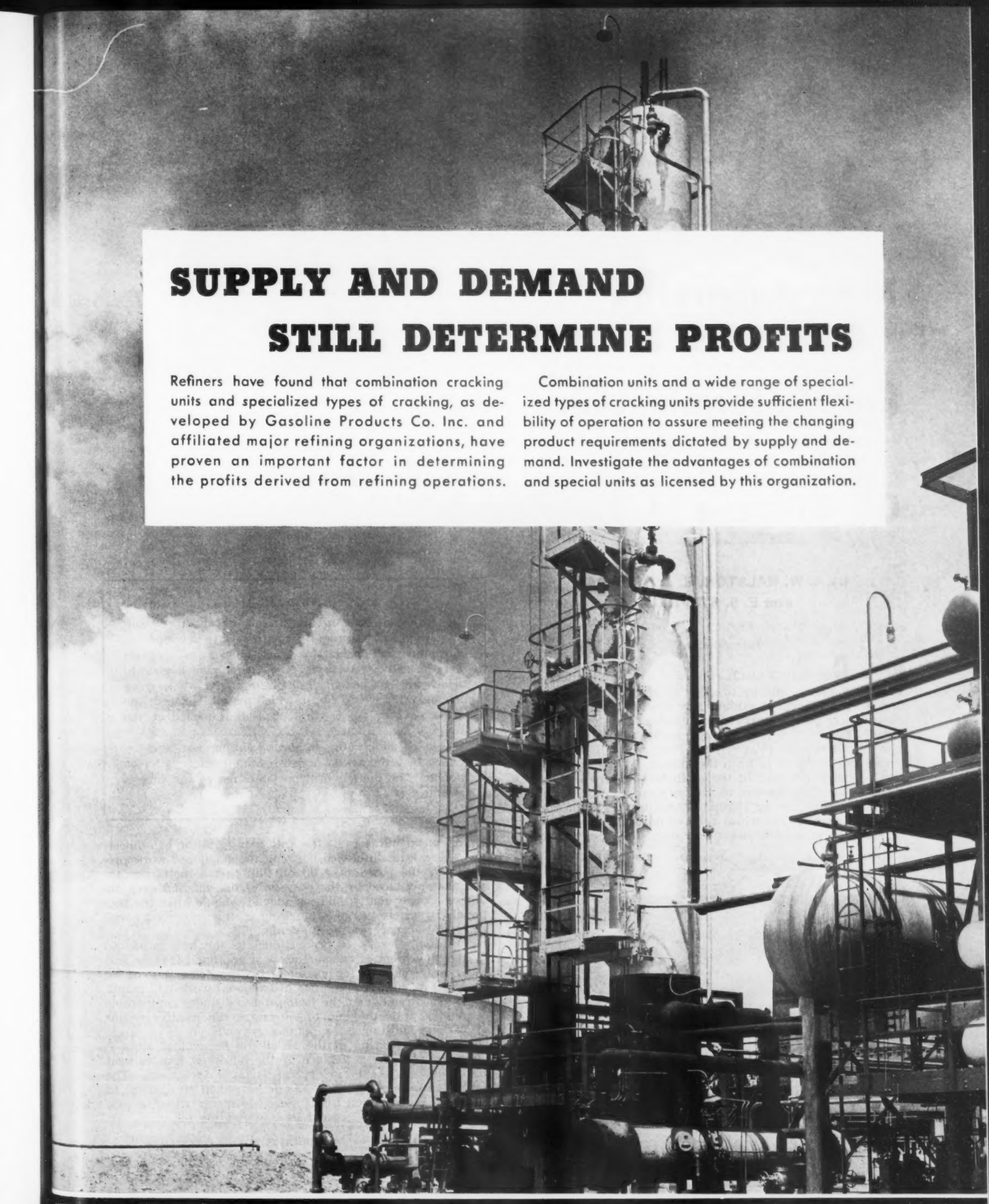
The data contained in the book was prepared from reports submitted by the foreign offices of the Department of Commerce and Department of State, and from official data and statistics supplied by the various foreign countries. The book is the fourth edition of World Chemical Developments. It is No. 169 of the Trade Promotion Series and is available for 30 cents by addressing the Superintendent of Documents, Washington, D. C.

Use Of "Synthetic" Earths In Refineries Increases

WASHINGTON, Nov. 1.—Production and consumption of fuller's earth in the U. S. increased in 1936, but the increase (2%) was small compared with that of petroleum refining (10%), according to the Minerals Yearbook of the U. S. Bureau of Mines. The apparent quantity was 31% less than in 1930, when a maximum of 328,642 tons was used. Over 90% of domestic sales were to oil refineries.

The fact that fuller's earth consumption has not kept pace with refining is attributed to expanded consumption of artificially activated earths, made from bentonite bauxite, and of acid-sprayed earths.

Spent earth is now being used by a leading California cement company for making a weatherproof portland cement. Three per cent of spent clay containing 20 to 30% carbonaceous matter is added to the clinker before grinding.



SUPPLY AND DEMAND STILL DETERMINE PROFITS

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GASOLINE PRODUCTS INC

New Apparatus

For Determination

Of Oiliness In Lubricants*

Fig. 1. Complete assembly of the apparatus developed in the Armour laboratories for testing oiliness characteristics of lubricants and additive agents for lubricants

265.1
830

By A. W. RALSTON, E. J. HOFFMAN and E. S. STEPHENS

Abstract

● By means of a machined steel disk and three half-round ball bearings, these authors have developed an apparatus and method by which oiliness in lubricants may be tested. A spring places tension on a plate to which are attached the ball bearings; the whole is assembled in a closed cup in which the oil is placed, and the disk with the bearings attached is rotated at 120 r.p.m.

Rise of temperature in the oil during test is determined by a thermocouple at five-minute intervals for 90 minutes, and the rate of temperature rise against time is obtained.

Introduction

CONSIDERABLE confusion exists regarding the nature of oiliness and its function in lubrication. The phenomenon of oiliness is exhibited by those substances which, due to their polar nature, form adsorbed films on surfaces. This stationary film may be either unimolecular or polymolecular. Since only relatively small amounts of polar compounds are required to form this film, it is evident that oiliness is not a function of the main body of the lubricant. Reduction of friction due to viscosity changes in the bulk of the oil should not be attributed to oiliness. When conditions are encountered which remove the fluid film, lubrication will be essentially dependent upon the adsorbed film. Many consider this to be the only manifestation of oiliness.

There is a difference between the frictional work produced by the passage of an oil film past a metal surface and that produced by the passage of one oil film over another. Consequently, oiliness addends should alter the frictional characteristics of a lubricant in the presence as well as in the absence of the fluid film.

Frictional work is proportional to the heat produced by the movement of one surface past another. If these surfaces are changed, for example, by the formation of an adsorbed oil film, a difference in frictional work will result. By a measurement of the heat produced under comparable conditions, it is possible to determine the relative values of various substances as oiliness addends.

External heating of the oil should be avoided since it indicates only the resistance of the adsorbed film to heat and masks its ability to decrease temperature rises. The apparatus herein described was developed in an attempt to measure the reduction in frictional resistance when certain oiliness addends are present in a lubricating oil.

*Contribution from the laboratories of Armour & Co. and the Stephens Laboratories Inc.

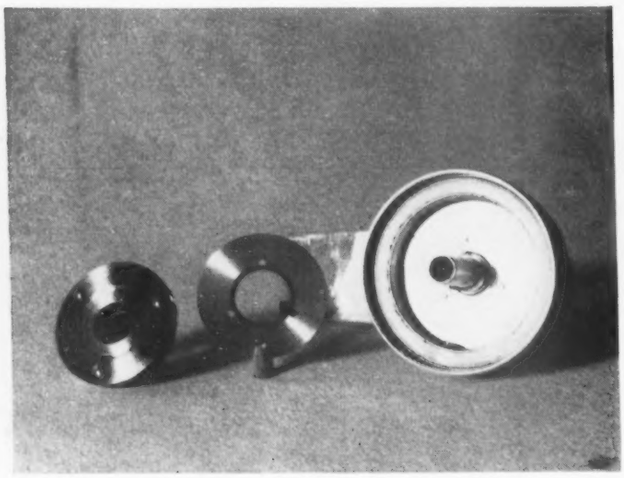


Fig. 2. The contact parts of the apparatus disassembled. Contact during the test is between the machined steel disk, center, and the plate fitted with ball bearings, left

Apparatus

The apparatus is shown completely assembled in Fig. 1. The lower box-like portion houses the motor. This is equipped with an ammeter, voltmeter and tachometer as shown in the figure. Fig. 2 shows the unassembled frictional parts. The contact is between the machine steel disk and the three half round ball bearings held in place

Fig. 7. Working mechanism of the Armour apparatus assembled

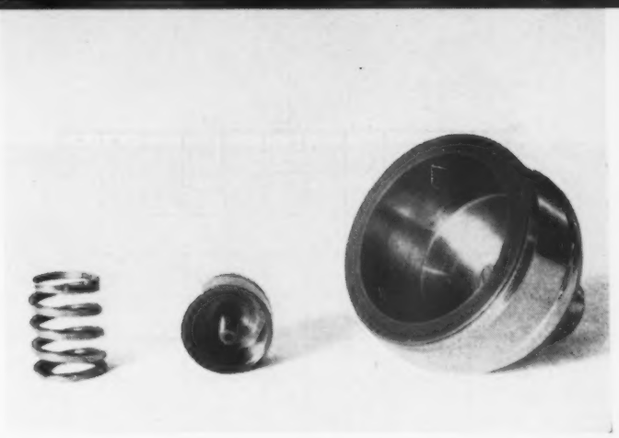


Fig. 3. Tension spring, screw and cover for the insulated oil cup

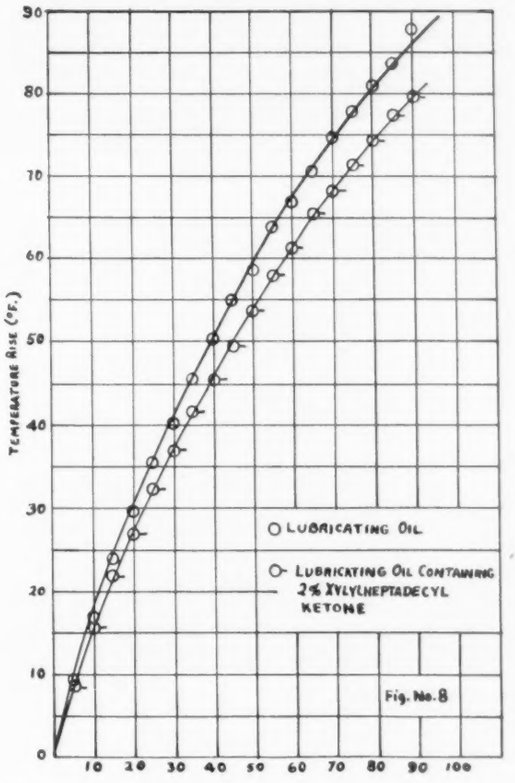
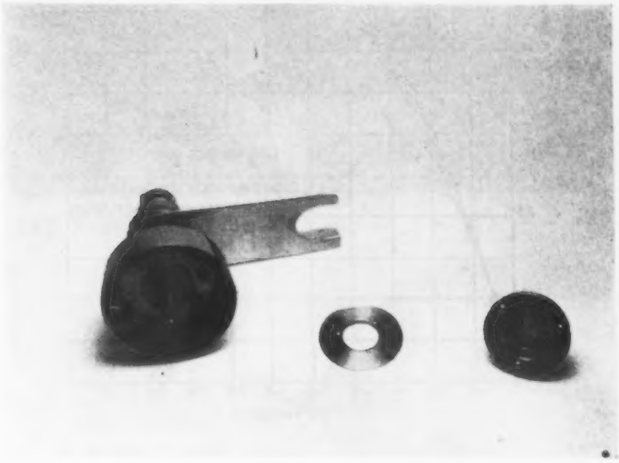
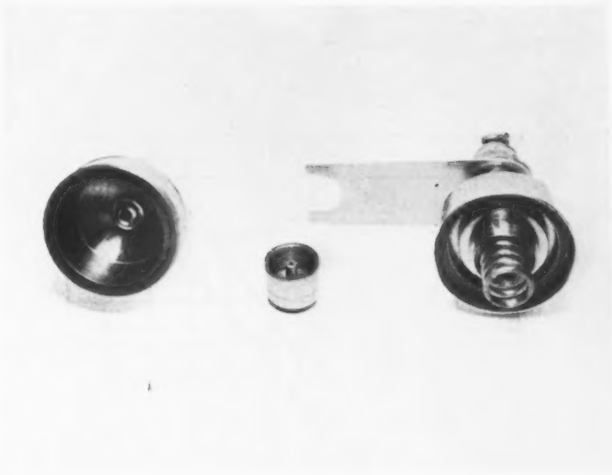


Fig. 8. Plot of temperature rise against time, with mineral lubricating oil and the same oil containing 2% Xylylheptadecyl Ketone





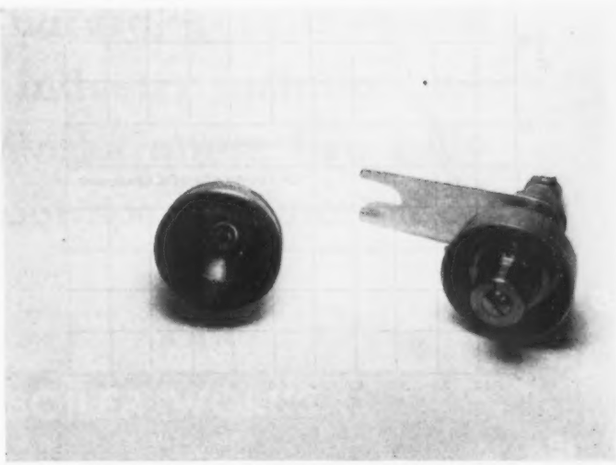


Fig. 4, Fig. 5, Fig. 6. Stages in the assembly of the working parts of the apparatus

in the upper plate. These are held in place by means of the spring and screw shown in Fig. 3. The top is also shown in this figure. The oil container is insulated so as to reduce the loss of heat to a minimum. The apparatus is assembled by placing the disk in the lower cup fitting the upper plate into place. The spring is then placed over the upper plate and tension applied by the screw. The test oil is then placed in the cup and the top portion of the apparatus screwed in place. Figs. 4, 5 and 6 show the various stages of this operation. The complete assembly is shown in Fig. 7.

In assembling the apparatus care must be exercised to see that the pressure applied is the same for each test. The disk carrying the half round ball bearings is rotated against the stationary plate in the test cup at a speed of 120 R.P.M. The temperature of the oil is determined by means of an iron-constantan thermocouple. Approximately ten grams of oil is required for each test. Temperature readings are made at five-minute intervals over a period of ninety minutes. The rate of temperature rise for the various oils against time is then obtained.

Results

A naphthenic lubricating oil, S.A.E. 30, was used as the blank oil in the experiments recorded below. Figs. 8, 9, 10

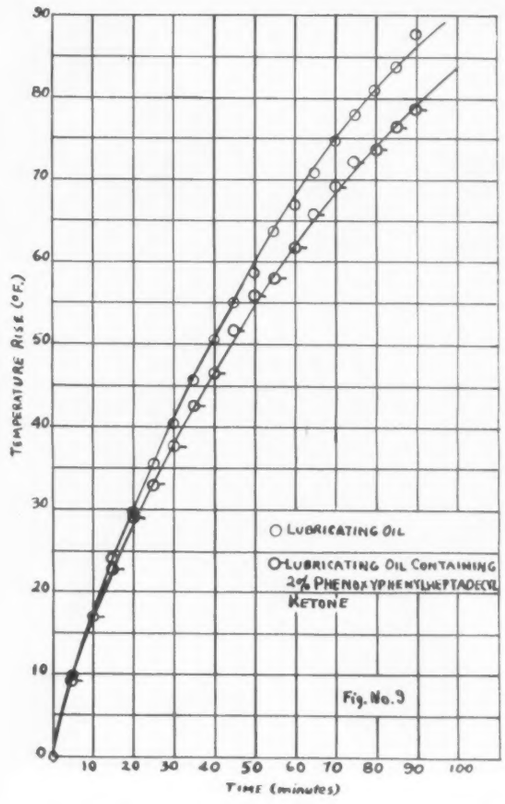


Fig. 9. Rate of temperature rise with time, of mineral oil and the same oil containing 2% of Phenoxyphenylheptadecyl Ketone

and 11 show the curves obtained using untreated lubricating oil and the lubricating oil containing various addends. It will be noticed that appreciable temperature differences were observed.

Tests were also run in which kerosine was used as the base oil. For one test two per cent of xylylheptadecyl ketone in kerosine was used, and for another two per cent of lubricating oil was added to the kerosine. When pure kerosine or kerosine containing two per cent lubricating oil was used it was impossible to maintain the speed at a constant value. In the test on kerosine the machine finally stopped running at the end of 26 minutes; in the test on kerosine containing two per cent lubricating oil the machine ran only 19 minutes. No difficulty was encountered in maintaining the speed constant during the test on kerosine containing two per cent of xylylheptadecyl ketone. Values for temperature rises during these tests are shown in Table 1.

TABLE 1

Data showing the rise in temperatures in the testing apparatus as produced by various materials when blended with kerosine

Sample	Temperature Rises (°F.) After 15 min.	After 25 min.
Kerosine	43.5°	63.5°
Kerosine containing 2% xylylheptadecyl ketone	25.3°	36.6°
Kerosine containing 2% lubricating oil	39.8°	....
Kerosine containing 2% phenoxyphenyl-heptadecyl ketone	20.1°	36.8°

A test of this nature is indicative of the film-forming properties of an addend.

Conclusions

The above described machine shows appreciable temperature reductions when film-forming compounds are added to lubricating oils. When these compounds are added to kerosine an indication of their film-forming abilities is obtained. On this basis it is believed that this apparatus is satisfactory for the measurement of oiliness in lubricants.

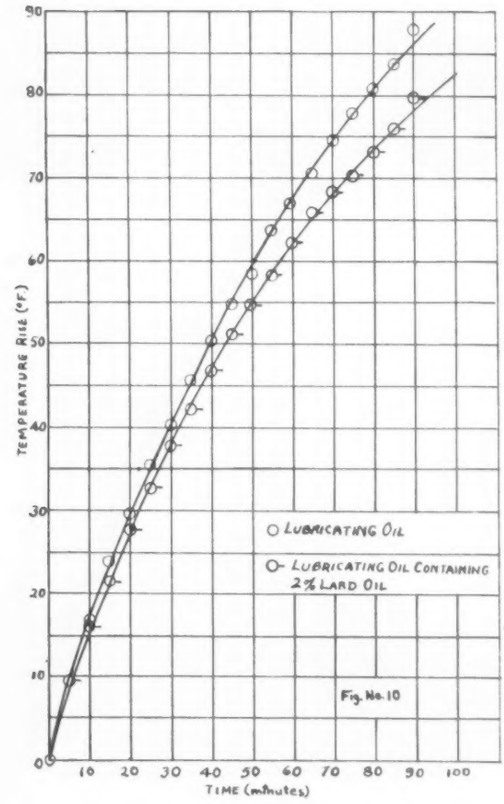


Fig. 10. Curves comparing the temperature rise of mineral oil and the same oil containing 2% lard oil

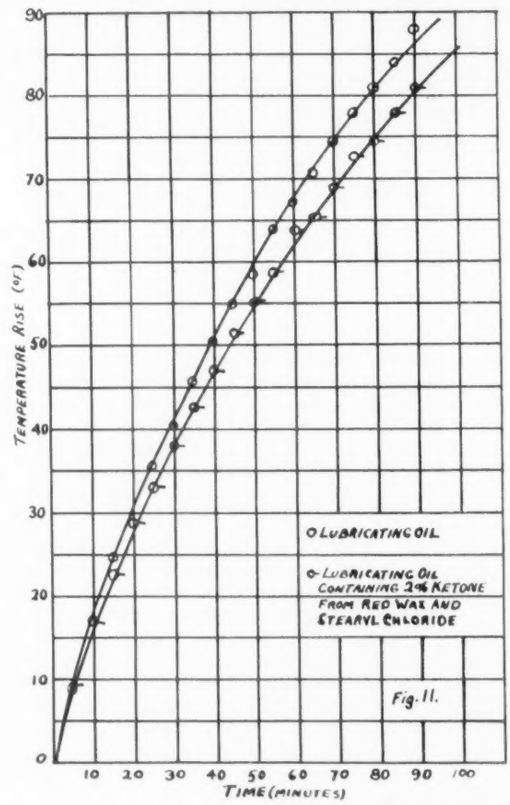
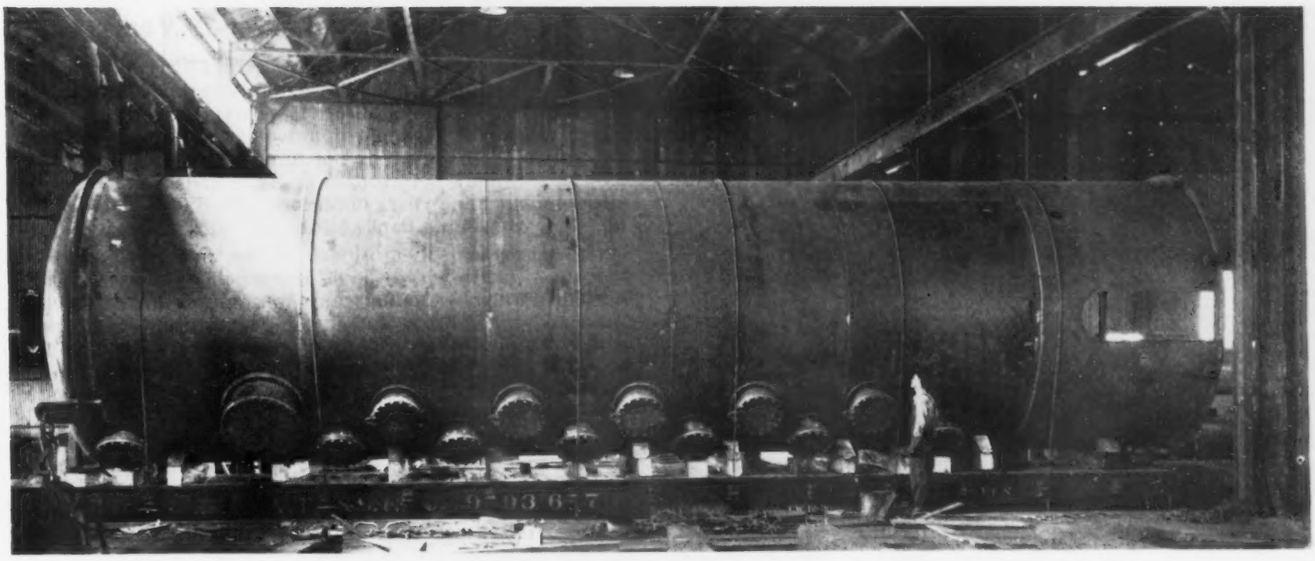
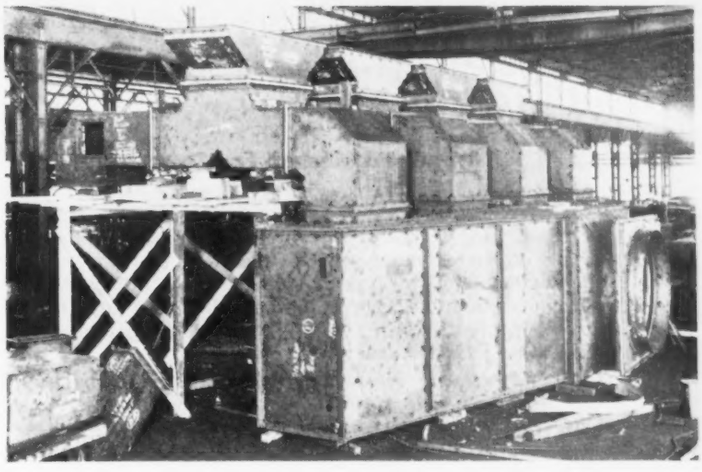

TEMPERATURE RISE (°F)
TIME (MINUTES)
O LUBRICATING OIL
O- LUBRICATING OIL CONTAINING 2% KETONE FROM RED WAX AND STEARYL CHLORIDE
Fig. 11.

Fig. 11. Comparison of temperature rise of lubricating oil, and the same oil containing 2% of ketone from red wax and stearyl chloride



12′ x 51′-3″ Vacuum Steam Still 5/8″ Heads — 1/2″ Shell



(Above)—Breeching for Tube Type Heater

(Right)—Berquist Bins for Carbon Black Plant

For heavy refinery work, natural gasoline plant equipment and other oil industry installations, Wyatt Metal & Boiler Works offers two fully equipped plants. Total floor space is more than 200,000 square feet.

Steel Plate Fabricators and Erectors

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PLANTS AT DALLAS AND HOUSTON

Trough designed by Pure Oil Co. in Edmond Field, Oklahoma, to prevent splashing salt water on the ground while draining from settling tank to syphon

Trough for Handling Salt Water in Field

The production of salt water with oil, and the ultimate disposition of it, is always a source of headaches for the oil man, and Edmond Pool, north-west of Oklahoma City is no exception to the rule. Pure Oil Co. operates one well in particular which makes a quantity of salt water, and disposes of it by the usual method employed in Edmond Pool. A convenient trough was devised by one of the lease men as a receptacle for the water to flow into as it leaves the syphon on the large wood tank in which it is separated from the oil flowing from the well.

The trough was made by using a short nipple of 10-inch pipe, part of which was cut away with a torch on the side intended for the upper section, and heads welded at both ends to make it water tight. Legs were attached to the trough, long enough that the "gadget" would create sufficient head for the water to flow readily to the earthen sump near the well. A 4-inch pipe was attached to the lower side through a hole burned in the pipe, leading to the disposal system used on the lease. Splashing is prevented by the sides of the trough, with the result that no contamination of the soil occurs.

Patent Granted after 19 Years

Patent No. 2,091,196 was granted recently to Carbon P. Dubbs for a "Process for Converting Hydrocarbons" 19 years after the date of the application. The average refinery patent carries a date of application two to four years prior to the date of issue though it is not unusual to find patents filed five or six years before date of issue and occasionally one with eight or nine years difference. To find a patent issued in 1937 with a filing date of June 20, 1918, is rare.

"Among the salient objects of the invention are to provide a process in which the oil is compelled to pass in a plurality of relatively small streams through the fire or cracking zone and then through a larger chamber or chambers located outside the fire zone and forming the vapor or distilling zone". Streams of progressively decreasing size are provided in the fire zone. One of the objects is elimination of carbon in the tubes.

Unvaporized oil is passed from the vapor zone through the cracking zone in a stream of decreased diameter relative to the first mentioned stream. These also pass to a vapor chamber where the vapors are removed and the unvaporized oil is again passed in a stream of smaller diameter through the cracking zone and to a vapor chamber to take off vapors. Pressure is maintained above atmospheric in the system. Residue is fractionally distilled at atmospheric pressure and the distillate obtained is returned to the cracking zone for retreatment.

The patent is assigned to Universal Oil Products Co.

Improved Method For Creep Test Analysis Reported

CLEVELAND, Nov. 1. — An improved method of making creep test analysis has disclosed, by tests on carbon-molybdenum specimens subjected to different heat treatments, that differences in creep behavior and in mechanical properties are definitely associated with differences in microstructure.

In seven heat treatments investigated, the maximum creep resistance over a 3000-hour test period was developed by the preliminary treatment of tempering the normalized steel for four hours at 1300° F., which produced a fine ground-mass precipitate, probably a molybdenum-rich carbide.

Elimination of "the personal error involved in graphical analysis" was accomplished by the use of "least squares" for analyzing the data obtained in creep tests. The method was disclosed by research physicists of the U. S. Steel Corp. in a paper presented before the American Society for Metals at Atlantic City, Oct. 20.

There were indications that, for any one heat treatment and testing temperature, the higher the stress employed in testing a given steel, the higher the final impact and tensile strength.

New Prospects for Oil In Sicily

LONDON—The presence of appreciable quantities of hydrocarbon gases coming from the earth near Francaville in the region of Portella Palomba, in the island of Sicily has led Italian authorities to believe that oil may be discovered in that vicinity, advices stated recently.

The Mining Office of Caltanisetta has been ordered by the Italian Minister of Corporations to investigate without delay, and to report on the prospects for oil prospecting in the vicinity of the gas emanations.

This reported discovery follows earlier reports, which state that the possibilities of finding commercial quantities of petroleum at other locations on the island have been reported as favorable. With several refineries now operating in Italy, crude for which must all be imported, the search for oil within Italian territory is being pushed with increased energy, reports say.

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SUN SHIPBUILDING & DRYDOCK COMPANY

Chester, Pennsylvania

A special wide nozzle is used to apply CO_2 to this ground fire and 100 pounds of the liquid is reserved for extinguishment

769.1
648.3

CO_2 Fire Fighting Equipment Increasing in Refineries

By M. G. VAN VOORHIS
N. P. N. Staff Writer

Abstract

Carbon dioxide has been singled out by unbiased authorities as the preferred type of fire extinguishment for a number of recognized types of fires. Some of these are typical of the oil industry. Experience in the use of carbon dioxide in controlling fires for which it is eminently adapted has suggested wider uses in the oil industry.

The accompanying article discusses some of the applications of carbon dioxide, its approval by the Underwriters, how it works, and some of its advantages and limitations.

CONSIDERED by oil company safety engineers and firemen as a fire extinguishing specialty and accessory, carbon dioxide is gaining access to refineries and in the oil industry in general for fire defense on an increasing scale. Its generally acknowledged superiority on fires in electrical equipment and its advantages of cleanliness and harmless application in the oil laboratory have opened the way for its wider use in the oil industry.

Now it is doing a bigger job in many refineries and advantageous uses have been found in other branches of the industry. Its adaptability in combating gas leak fires where there is no surface on which to discharge foam is being recognized. At The Atlantic Refining Co. plant at Point Breeze, Pa., for example, carbon dioxide 15-pound units are to be seen scattered over the towers of the cracking plant and the new polymerization plant as first aid equipment. This use is highly approved by Plant Fire Chief Tom Lavin in spite of higher first cost and his objection to being forced to buy and keep on hand spare charged cylinders to replace emptied ones which require one or two days to be recharged.

Mr. Lavin finds carbon dioxide desirable for fires in other outdoor places such as pits over 12 inches deep and around pumping equipment. Any enclosed space where fire might break out is an ideal set-up for carbon dioxide, he says. Atlantic has no carbon dioxide system requiring more than one cylinder but smaller units are placed for convenient use in relatively small semi-confined places. No unit under 15 pounds (with one special exception) is considered of sufficient capacity for any emergency which may arise.

Enclosed spaces of any size can be flooded to snuff out fire but the first objection raised is comparative high cost when the space is large. One engineer said all it would take to put carbon dioxide into some places where he would like to see it would be convincing cost figures to add to known advantages in order to match present protection. As far as tanks are concerned the National Board of Fire Underwriters has published its approval for application over liquid surface areas up to 1600 square feet. This would be the area in a vertical 45-foot diameter tank. The significant fact about carbon dioxide is its present widespread use in spite of higher first cost.

Some cost reduction can be made with carbon dioxide systems by having one bank of cylinders protect two or three spaces. The gas supply would be sufficient to flood

totally any one of the three. Such systems may be made to operate automatically when a fire starts.

The quantity of gas required in a system for total flooding an enclosed space has been set forth by the Underwriters as follows: 16 cu. ft. per lb. of gas up to 1600 cu. ft. of space protected; 18 cu. ft. per lb. of gas up to 4500 cu. ft. of space protected; 20 cu. ft. per lb. of gas up to 50,000 cu. ft. of space protected; 22 cu. ft. per lb. of gas over 50,000 cu. ft. of space protected.

A room 11 x 14 x 9 feet would have less than 1400 cubic feet, which, figured at 16 cubic feet per pound, would require about 87 pounds. Therefore a 100-pound cylinder would be used for this room. Many other details on inert gas systems are covered in National Board of Fire Underwriters Pamphlet No. 12. This booklet is not concerned with hand extinguishers or those which may be moved about on two-wheel carriages.

In the marketing and transportation branch of the industry some applications are to be found on loading racks, trucks, and at service stations, and pipeline pumping stations. Units of 10 to 15 pounds are recommended on trucks by one safety engineer, as based on his experience in demonstrations, but satisfaction with lower cost carbon tetrachloride extinguishers blocked his recommendations.

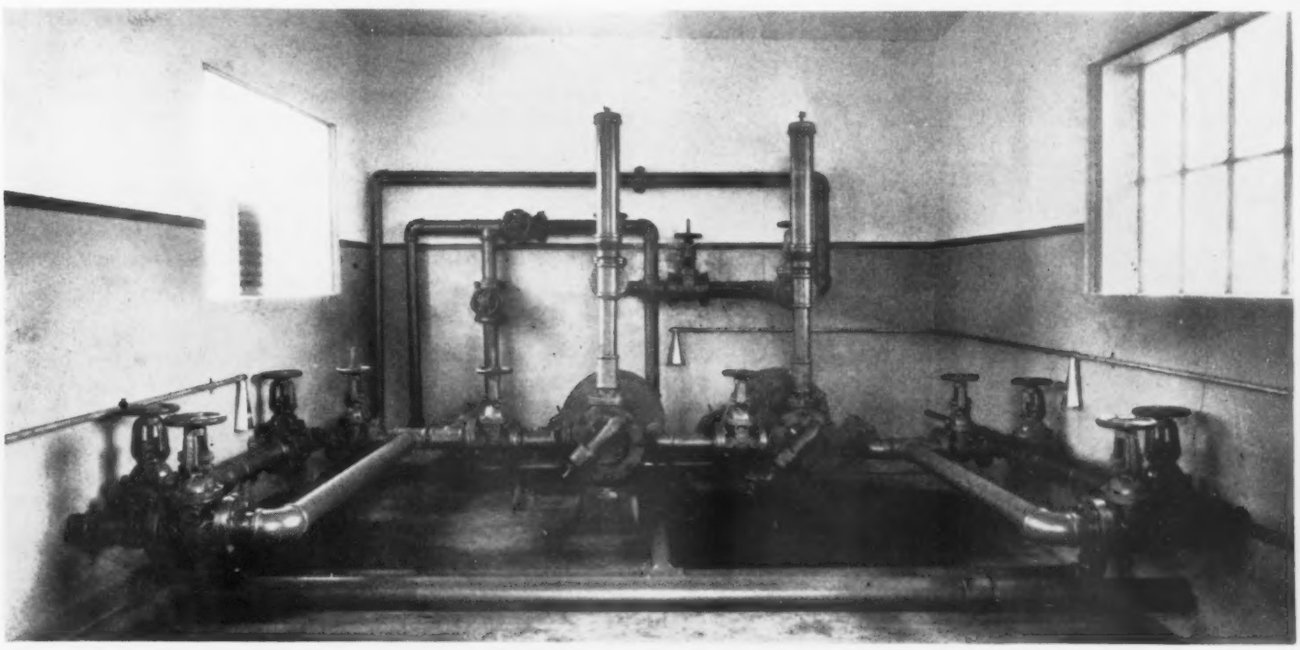
Some convincing demonstrations have been put on with carbon dioxide, particularly in spill fires of the type encountered with trucks, which are probably responsible for those now in use. Spills covering considerable area are beyond the range of the ordinary hand extinguishers, however, unless the area is in the shape of a long narrow strip.

Successful use of carbon dioxide at sea gave impetus only a decade ago to more extensive development of carbon dioxide for industrial use. Several advantages made it sufficiently attractive to overcome the higher cost occasioned by the necessity of holding it at a pressure of 700 to 1000 pounds per square inch. A disadvantage as far as costs are concerned, this property puts the material to advantage in extinguishing fire, for it expands instantly on release up to 450 times its stored liquid volume (except the small fraction which is frozen to solid snow by the sudden expansion). The gas so generated is 50 per cent heavier than air and so has the quality of resting upon the surface of flammable liquids and permeating through loose goods or into crevices.

The function of this gas is to reduce the percentage of oxygen in the air and gases surrounding burning oil from 21 per cent (normal) to 15 per cent or less. For other burning materials the percentage may have to be reduced lower but for gasoline and kerosine this is sufficient. When it does this the fire is snuffed out. Foam, in contrast, cuts off the oil vapor supply to the flame instead of the oxygen supply by preventing heat from the flame reaching the oil surface.

The quickness of carbon dioxide (CO_2) is one of its valuable assets. So fast is it that two-pound extinguishers are exhausted in 40 seconds. Quick action is essential, it is pointed out by the National Board of Fire Underwriters and it is best used for quick, flashy fires not involving glowing coals and not burning long enough to produce heated surfaces of high enough temperature to reignite vapors once the fire is out. This fact is held up by safety engineers as a bar to exclusive dependence upon

Inert gas producers such as this one are used to prevent fires by displacing flammable gases in refining equipment while shut down—Courtesy C. M. Kemp Mfg. Co., Baltimore



A pump room installation of a carbon dioxide fire extinguishing system

This truck fire lasted less than a minute and the performance was repeated by inexperienced observers

CO_2 in many instances, but particularly where wood or other inflammable materials are likely to be included in the fire.

Carbon dioxide extinguishers are not affected by the coldest climate except in slowing down the rate of discharge, a factor which should be taken into account in evaluating a given size of unit. This gives it an advantage for unheated locations where there is a fire hazard. Even carbon tetrachloride (CCl_4) freezes at —10° F. whereas it takes a temperature of —110° F. to liquefy CO_2 at atmospheric pressure.

The gas itself is harmless. Humans exhale it. It is tasteless and odorless, the same as the deadly carbon monoxide (CO) with which it is sometimes confused. It is suffocating in sufficient quantity but it is possible to live in an atmosphere so reduced in oxygen content that a candle will not burn and of course its presence is less injurious than smoke generated by flames.

The refrigerating effect, as a means of dissipating heat through the production of snow at a temperature of —110° F., appears to have less significance quantitatively than this low temperature indicates when compared with the heat water will dissipate. The same heat which would vaporize a gallon of water at 68° F. would vaporize nearly 17 gallons of liquid carbon dioxide and if the liquid temperature were 86° F. the same quantity of heat would vaporize nearly 50 times as much CO_2. However, this takes no account of the immeasurably quicker reception of this heat by carbon dioxide as compared to water, which is said to be an advantageous factor.

A 15-pound carbon dioxide unit in action on a pump valve fire at an oil refinery—Courtesy Walter Kidde & Co

Carbon dioxide might be said to be the ultimate in inert gas extinguishers. Steam, flue gas or exhaust gas, and carbon tetrachloride are all more or less inert gases when applied to fire, i.e., they go into action as gases and their object is the same, namely, to dilute the oxygen content of the air feeding the flames.

Steam has some disadvantages which have relegated it to a minor role in fire fighting and flue gas is too slow unless under pressure like carbon dioxide. Exhaust gas is now being successfully used as a preventive measure. Special gas generating equipment is used to produce inert gases to be used as flushing agents when refining coils, towers, tanks, and the like are shut down for any reason.

Three types of discharge mechanism are used on cylinders to assure long time storage at pressures from 700 to 1000 or more pounds per square inch. One type of valve employs a sealing disc which is punctured to release the entire cylinder contents. Another has a seat valve which opens and closes like a water faucet. The third is a combination of these two with a less expensive shut off valve which will not retain the remaining contents over a long period but will conserve them for use in case of a second outbreak of fire.

These valves have special design features that fit them particularly to this service, make them fool proof, and assure that they are not clogged by snow during discharge. The carbon dioxide must be of a high purity also. Traces of moisture are particularly detrimental and quickly freeze valves closed.

Monsanto Chemical Honored For Plant Achievement

The 1937 "Award for Chemical Engineering Achievement" has been awarded to Monsanto Chemical Co., St. Louis. The award was instituted by "Chemical and Metallurgical Engineering" in 1933 to stimulate a broader participation of chemical engineers in the affairs of industry and to honor every two years that company which has contributed most to the advance of the chemical industry and of the chemical engineering profession.

In making the 1937 award, consideration was given primarily to the successful design, construction and operation of a new phosphorus producing plant built this year near Columbia, Tenn. Within a period of 15 months this plant came into being as the largest producer of phosphorus in the U. S. The new Tennessee plant incorporates radical improvements in design and construction of electric furnaces and auxiliary equipment over the company's plant at Anniston, Ala.

Formal presentation of the award will be made to officers of Monsanto Dec. 10. The award committee is headed by Martin H. Ittner, president of the American Institute of Chemical Engineers and chief chemist of Colgate Palmolive-Peet Co. The committee consists of 10 members who are prominent chemical engineers and executives.

Engine Development History In New Silent Film

"The Power Within," a new 2-reel silent motion picture film in the film library of the Bureau of Mines, depicts the historic development, construction, and operation of the modern internal combustion engine and operating parts of the automobile. The film includes pictures taken at the rate of 5000 per second of the actual combustion within the engine cylinders as well as simple animated drawings of the operation of engines and accessory devices.

Copies of this film in 16-mm. and 35-mm. size are available for exhibition on application to the Bureau of Mines Experiment Station, 4800 Forbes St., Pittsburgh. No charge except for transportation is made. Nearly 9,000,000 persons viewed 4000 reels of the bureau's films last year on 100,342 occasions.

Patent Literature OF TODAY

Lubricating Oil. No. 2 090 333, *issued Aug.* 17, 1937; *filed June* 27, 1935; *R. C. Osterstrom, assignor to The Pure Oil Co.; one drawing;* 8 *claims.*

Lubricating oil is produced from polymers obtained by polymerizing only the gum-forming and color-imparting compound in low boiling hydrocarbons produced by vapor phase cracking of higher boiling petroleum oils solely with an adsorptive catalyst which selectively polymerizes gum-forming and color-imparting bodies. Polymers are heated with a metallic halide catalyst at elevated temperatures below cracking temperatures and an overhead fraction of lubricating oil is distilled.

* * *

Oil analysis. No. 2 089 017, *issued Aug.* 3, 1937; *filed Oct.* 9, 1934; *R. E. Burk, assignor to Standard Oil Co. (Ohio); no drawing;* 4 *claims.*

Lubricating oil is added to a larger amount of a differential solvent including about 80% isopropanol and 20% butanol and admixed. Degradation products separate in a visible layer.

* * *

Cracking. No. 2 088 987, *issued Aug.* 3, 1937; *filed June* 27, 1934; *C. H. Angell, assignor to Universal Oil Products Co.; one drawing;* 2 *claims.*

The invention refers particularly to a process for conversion accompanied by reduction of the residual liquid conversion products to coke. It differs from previous methods in the provision for effecting appreciable further vaporization of the liquid conversion products under reduced pressure to recover low-boiling components for further conversion without first subjecting the same to the high temperature conditions necessary to accomplish coking of their higher boiling non-vaporous components. Another difference is that the invention is directed exclusively to coking of the non-vaporous residual liquid resulting from the further vaporization of the liquid conversion products of the process. Means are afforded for utilizing regulated quantities of the charging stock for cooling hot vaporous products of the coking operation sufficiently to remove, prior to their fractionation for the formation of reflux condensate, heavy components undesirable as cracking stock, including entrained particles of coke-forming materials. The high-boiling components are commingled with the non-vaporous residual liquid and the high-boiling components of the charging stock and subjected to coking therewith.

* * *

Pour point. No. 2 088 898, *issued Aug.* 3, 1937; *filed Oct.* 2, 1934; *F. W. Breth, assignor to Standard Oil Development Co.; no drawing;* 3 *claims.*

The pour point of a lubricating oil over 15° F. and caused by wax is reduced by addition 0.2 to 5% of a polymerized oil produced by action of a silent electrical discharge.

* * *

Sweetening. No. 2 089 373, *issued Aug.* 10, 1937; *filed Aug.* 19, 1935; *R. W. Henry, J. A. Reid, and W. A. Schulze, assignors to Phillips Petroleum Co.; one drawing; one claim.*

In a continuous process of sweetening mercaptan-bearing oil a corrosion-resistant centrifugal pump is employed to mix and contact oil with a sweetening solution comprising copper sulfate and sodium chloride. The inlet of the pump is connected by separate conduits to oil and solution. Settling takes place in a tank having an inlet about midway of the height, an upper outlet for withdrawing sweetened oil, and a lower outlet for withdrawal of partially spent solution.

A vented aerating tank received the spent solution through a conduit having an automatic liquid level control valve. After aerating, the solution passes to a settling tank. A second centrifugal pump mixes the sweetened oil with a stabilizing solution to remove traces of copper compounds and the mixture of oil and stabilizing solution are separated in another settling tank.

* * *

Corrosion. No. 2 089 579-80, *issued Aug.* 10, 1937; *filed Sept.* 1, 1934; *W. A. Schulze, assignor to Phillips Petroleum Co.; no drawing;* 10 *and* 14 *claims respectively.*

Oils containing sulfur are treated with a compound containing a hydroxyl and a carbonyl radical attached either to the same carbon atom or to its equivalent in a conjugated system to prevent corrosion of copper and its alloys. Polyhydrozy compounds and compounds containing nitrogen are not intended to be included. Para-hydroxy benzophenone is particularly outstanding and organic compounds of the general formula $CH_2OH\text{-}CH_2\text{-}O\text{-}R$, wherein R is either an alkyl, aryl, acyl or benzoyl radical, are particularly effective for this purpose. Ethylene glycol mono-ethyl ether is an effective compound.

* * *

Conversion. No. 2 089 659, *issued Aug.* 10, 1937; *filed Sept.* 28, 1934; *J. C. Morrell, assignor to Universal Oil Products Co.; one drawing;* 16 *claims.*

A unified system is described for simultaneous conversion of low- and high-boiling fractions of the charging stock together, respectively, with low-and high-boiling fractions of the insufficiently converted intermediate products of the process.

A feature is that overhead vaporous products from the topping operation are subjected, together with low-boiling insufficiently converted intermediate products of the cracking operation, to conversion or reforming at relatively high temperature and preferably the overhead products from the topping operation are supplied to this heating coil while still in vaporous state without being first subjected to condensation, which would result in considerable loss of heat, in order to obviate the use of a vapor pump to pass the hot vaporous products from the topping operation through the heating coil.

Another feature is that the conversion of the highly heated relatively low-boiling materials from the high-temperature heating coil is retarded sufficiently to prevent excessive conversion by cooling by indirect contact with charging stock for the process which is thereby furnished heat to assist its fractional distillation.

* * *

Stabilization. No. 2 090 159, *issued Aug.* 17, 1937; *filed May* 28, 1935; *H. A. Smith, assignor to The Texas Co.; one drawing;* 7 *claims.*

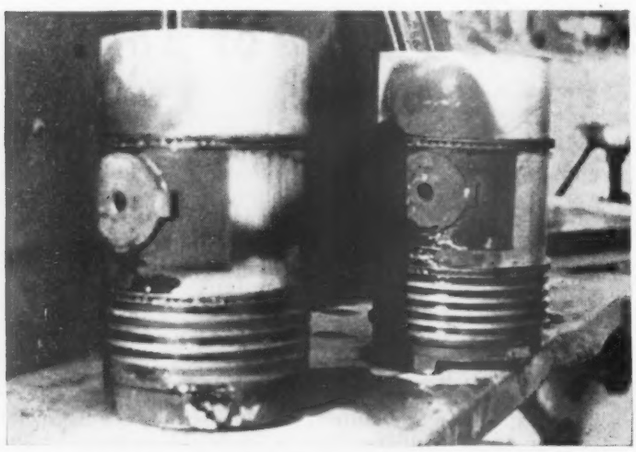
In the method of purifying normally liquid low-boiling cracked hydrocarbons by passing them in the vapor phase downwardly through a treating zone containing a bed of solid adsorptive catalytic material employed to promote conversion of unstable constituents to polymers of higher boiling point, an improvement is provided whereby a suitable solvent is introduced for the polymers into the bed at several spaced points. A greater flow of solvent is maintained through the lower portions of the bed than through the upper portions.

* * *

Sweetening. No. 2 090 190, *issued Aug.* 17, 1937; *filed Dec.* 6, 1934; *C. E. Dolbear, assignor to P. Wiseman, P. K. Wiseman, and C. E. Dolbear, trustees; one drawing;* 5 *claims.*

Petroleum distillate is contacted with air in the presence of a solid oxidation catalyst in the absence of

Pistons from a Caterpillar Diesel D-11000 Tractor after 4,200 hours operation on an SAE 30 Alox-blended Pennsylvania oil.



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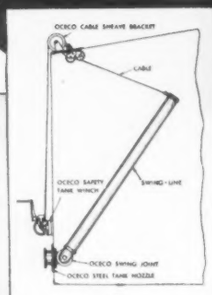

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water. Mercaptans or other objectionable compounds are oxidized to alkyldisulfides or other non-corrosive compounds. Effectiveness extends from temperatures of 100-600° F. Sodium ferrite is a highly active oxidation catalyst but others such as soda lime, caustic soda, and metallic oxides such as red or black iron oxide, molybdic oxide, zinc oxide and the like, suitably activated as by calcination, may be used.

Distillate is passed in liquid state downwardly through a pervious bed of granular sodium ferrite at such rate as to flow in a film over the surfaces of the sodium ferrite while leaving the voids of the bed open to flow of air. Air is passed through the bed in intimate contact with the film of liquid distillate.

* * *

Treating. No. 2 089 760, *issued Aug.* 10, 1937; *filed Oct.* 25, 1934; *A. J. Paris, Jr.; one drawing;* 8 *claims.*

Lubricating oils, heavy distillate fuel oils, or gas oils are admitted to a compression zone where a nitrogen-containing, non-oxidizing gas is compressed under temperature conditions such that there is no decomposition and a portion of the gas is entrained by the oil.

Oil so treated is said to yield a soft graphitic carbon instead of hard and abrasive carbon in service.

* * *

Stabilization. No. 2 090 484, *issued Aug.* 17, 1937; *filed Jan.* 27, 1936; *I. I. Ostromislensky; no drawing;* 7 *claims.*

Cracked gasoline is stabilized by addition of a compound having the formula:

$$X—R—(M)_{n-1}—R'—Y$$

where M is selected from the class consisting of alkylene, sulfur, azo, hydrazo, Schiff's base group, *n* is an integral number; R is an aromatic hydrocarbon nucleus of molecular weight less than 125, pyridine, quinoline, pyrrole, furfuran, thiophen, pyrazolone, whose ring hydrogen is substituted by X in the quinonizable position such as 2 or 4 or both in the hydrocarbon ring; and X is one or more active radicals taken from the class consisting of OH, NH and NH_2. R′ is an aromatic hydrocarbon nucleus of molecular weight less than 125, pyridine, quinoline, pyrrole, furfuran, thiophen, pyrazolone, which may be the same or different from R and whose ring hydrogen is substituted by Y which is one or more OH radicals in the quinonizable position such as 2 or 4 or both on the hydrocarbon ring.

* * *

Vapor phase cracking. No. 2 090 766, *issued Aug.* 24, 1937; *filed July* 22, 1932; *E. W. Rembert, assignor to Tide Water Associated Oil Co.; 2 drawings;* 3 *claims.*

The main object is to provide a method whereby liquid hydrocarbons or fogs of liquid material held in vapors can be converted to low boiling hydrocarbons with a minimum formation of fixed gas and free carbon. The novelty lies in the method of insuring complete vaporization with little superheating before the materials to be cracked are raised to the cracking temperature.

To accomplish this hydrocarbon material is introduced as an atomized spray or as a fog into a vaporizing chamber where they are mixed with the hot and preferably non-oxidizing gas. The gases and atomized liquid are quickly mixed and reach a temperature below cracking. This mixture then passes to a reaction chamber in which additional heating gas is introduced instantaneously mixed. This gas consists of the products of combustion of fuel and air. After being maintained at the cracking temperature they are chilled quickly by a cooler oil which is sprayed against the stream of reaction products.

* * *

Polymerization. No. 2 090 905, *issued Aug.* 24, 1937; *filed Nov.* 17, 1936; *D. R. Stevens, and W. A. Gruse, assignors to Gulf Research & Development Co.; no drawing;* 8 *claims.*

In forming high molecular weight compounds from olefins with catalysts such as strong sulfuric acid and sulfonic acids, the contact is effected in the presence of a polyhydric aliphatic alcohol in such amount as to restrain non-polymerizing action of the strong acid.

* * *

Automatic control. No. 2 090 915, *issued Aug.* 24, 1937; *filed Nov.* 23, 1933; *R. C. Powell and L. E. Priester, assignors to The Texas Co.; 2 diagrams;* 3 *claims.*

Particularly adapted to automatically control cleanli-

ness of oil passing through the heating zone, an apparatus for regulating the opacity of the secondary condensate is provided. It comprises regulatable means for introducing variable amounts of cooling fluid into the primary fractionating zone, means for separately condensing a portion of vapors passing from this zone to a secondary fractionating zone, means responsive to the opacity of the condensate formed by separately condensing this portion of vapors for regulating the amount of cooling fluid introduced into the primary fractionating zone, and means for interrupting the operation for a predetermined time interval. Opacity is detected by means of a photo-electric cell. A sight glass is interposed between the cell and a light source.

* * *

Cracking. No. 2 091 118, *issued Aug.* 24, 1937; *filed April* 1, 1933; *E. C. Herthel and C. L. Schmidt, assignors to Sinclair Refining Co.; one drawing;* 2 *claims.*

A reduction in the proportion of tar is made without involving the disadvantage of the usual production of dirtier and less valuable tars. After cracking, pressure is reduced on products which are introduced to a separate chamber where a liquid oil fraction is introduced continuously to cool the products. The liquid vaporizes completely and is free of those constituents of the expanded hot oil products of boiling range abutting that of the tar to be separated.

Vapors are taken off and condensed. Condensate includes those constituents of hot oil products of boiling range abutting that of the tar to be separated. They are prevented from returning to the separating vessel. There is maintained in the vessel that minimum volume of separated liquid tar necessary to maintain liquid discharge. A vapor fraction and a liquid tar are separately discharged from the separating vessel.

* * *

Desulfurizing. No. 2 091 239, *issued Aug.* 24, 1937; *filed March* 8, 1934; *F. W. Hall, assignor to The Texas Co.; one drawing;* 4 *claims.*

An oil-soluble heavy metal soap is dissolved in a naphtha distillate containing relatively stable corrosive organic sulfur compounds. The mixture is heated to a reforming temperature (800-1200° F.) under superatmospheric pressure such as to maintain a substantial amount of the distillate in liquid phase. Metal sulfides are formed and the purified and reformed distillate is distilled from the residue to obtain a non-corrosive product.

* * *

Cracking. No. 2 091 375, *issued Aug.* 31, 1937; *filed Feb.* 29, 1936; *R. Pyzel, assignor to Universal Oil Products Co.;* 3 *drawings;* 3 *claims.*

In conversion in a regenerative type heater in which hydrocarbons are passed over the surfaces of previously heated refractory materials and the rate of heat transfer from the hot refractory surfaces to the hydrocarbons is greater than the rate of heat transfer from the interior of the refractory materials to their external surfaces, an improvement is made which comprises periodically stopping the flow of hydrocarbons over the surfaces for sufficient time to permit reheating. The flow is diverted to a second conditioned heater and alternated back and forth until both need reconditioning. A third and fourth heater are substituted for the first two and the same procedure is followed while reconditioning takes place on one and two.

* * *

Lubricating oil. No. 2 091 627, *issued Aug.* 31, 1937; *filed June* 8, 1934; *H. A. Bruson, assignor to Rohm & Haas Co.; no drawing;* 10 *claims.*

Viscosity temperature coefficient of an oil is improved by adding a small quantity of an oil-soluble, viscous, heat-polymerization product of an ester of alphamethacrylic acid and a monohydric saturated alcohol containing more than four carbon atoms.

Donnelly Cracking Process

The

Process

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New or Recent Developments Seen

At Houston Oil Show

● In any showing of refining and oil field equipment will be found a varying number of new wrinkles, ideas, designs and applications of engineering, chemistry and mechanics to different types of equipment. The Houston Oil World Exposition showed a large number of such innovations and improvements, which are of primary interest to refiners, natural gasoline manufacturers and technolegists in every branch of the industry.

We mention here, briefly, some of these ideas and innovations. Not all of them may be rated as new, of course. Equipment companies do not suddenly bring out all new developments immediately preceding a given meeting or exposition, but their introduction is a gradual process. Therefore the items summarized here are either new or were announced recently enough that not all refining technologists may be aware of them. Keeping up with the new designs in equipment, one by one, means keeping up with the forefront of progress, means knowing the best tools which are available to the refiner, without which knowledge the refiner handicaps himself unduly.

* * *

Proportioning Pumps

Automatic control equipment is standard run-of-mine stuff for the refiner and has been for years. Among the newer, though not always *new*, items of important equipment shown at Houston are several proportioning pumps displayed. The McCord Radiator and Mfg. Co. of Detroit showed its Type C measuring pump, designed especially for accurate measuring of chemicals into crude lines, in treating systems, or other operations where exactness is of paramount importance, say its manufacturers. This pump will operate against pressures as high as 2000 pounds, the operating parts work in an oil bath, it is supplied in ratchet, rotary or motor drive, with speed ratios from one to one up to 68 to one, depending on the service required.

Individual parts of the pump can be replaced immediately or removed for cleaning with a minimum of trouble and time loss. A double check valve is provided and installed in the end of the line, keeping the line full and insuring immediate delivery of the liquid the instant the pump is started.

Proportioneers, Inc. are supplying its proportioning pumps, such as the Chlor-O-Feeder, now especially to water conditioning systems. This pump will handle hypo, alum, ammonia, ferric chloride and similar solutions for water conditioning for water capacities of 1000 G.P.M. continuously, and rates of up to 2500 G.P.M. for several hours, daily rate not to exceed 1½ million gallons per day. Some models work at pressures of 150 pounds or more. These pumps may be adapted to a large number of chemical and refining problems, say the manufacturers. Control of the pH value of boiler, refinery and other water supplies to prevent corrosion and other troubles is simple either in variable or constant flow rates by these proportioners, the makers say, and they have been applied in numerous industrial fields for these purposes, handling lime, soda ash sulfuric acid, sodium silicate and similar solutions in the exact proportions needed to maintain pH at the desired value.

Hills-McCanna Co. showed the Type M chemical proportioning pump which is referred to as the pilot plant size of pump for careful and exacting proportioning of medium quantities of liquids. A long adjusting screw on the proportioning device is 100% operable while the pump is running, avoiding the necessity for stopping operations to re-set proportions.

Brown Instrument Co. offers its new Catalog No. 8902, showing an expanded list of Air-O-Line control and recording instruments. These instruments have ranges of 1% to 150% throttling capacities, with automatic reset features which have been marketed by this company for some time. Well known to oil refiners especially is the feature of these instruments which enables the operator to set the instrument at exactly the right point and range by the manual adjustment of a screw by means of a screwdriver while the unit is operating.

The art and science of welding as applied to oil country and refinery problems has become an all-pervading technique, and was broadly represented at the Houston Exposition. Lincoln Electric Co. had demonstrating equipment on hand for aiding welders in the solution of new or knotty problems. The principle, process and advantages of the shielded-arc method of electric welding is well known in the industry, but new ideas and tricks are continually being brought out for the advantage of users of welding equipment.

The A. O. Smith Corp. showed a new method for building super-strong pressure vessels of relatively small diameter. This principle is called the multi-layer method of construction and is essentially the welding of several cylinders, one outside the next smaller, to a thickness of four inches or more, the cylinders being fitted in such a manner that the resulting heavy chamber is far stronger and more uniform in strength, freer from faults and weak spots, than a chamber rolled or fabricated from a single sheet of the thickness needed. This system is recommended by the makers for chambers the wall thickness-to-diameter ratio of which is greater than one to 10.

In the line of laboratory equipment, it was noted that the W. H. Curtin Co., showing a line of drying ovens, water baths, distillation and extraction apparatus for laboratory use, had printed the complete program on refining technology for the convenience of refiner visitors. These copies were the only complete copies of this part of the Exposition program available, the "Expo" organization not having provided official programs for the refinery meetings.

Interesting in the Wescott and Greis exhibit was the Robinson Orifice fitting. By its use the orifice plate in a fluid line can be removed and changed or replaced without interrupting the fluid flow, the plate being withdrawn into the housing, and the housing cut off from the line by a valve, to permit its removal through a removable side opening.

Fisher Governor Co. showed a pair of models of heavy and extra heavy tube headers, one with a single 180° return bend with uniform cross-section, another suitable for pressure of 1000 pounds and 1000° F. using a 20° angle on the plug bevel instead of 15° as is more cus-

tomary, facilitating the easy removal of a "frozen" plug as may happen frequently at high temperatures and pressures.

* * *

Pyrene Mfg. Co. is boosting its recent development of Foam-Air, by which foam is made mechanically. In this setup two gallons of Foam-Air will form 800 gallons of foam, from the Hip Pack, a portable container and nozzle which can easily be handled by any workman. Another innovation in this company is the handling of heavy non-skid chains for trucks and tractors.

* * *

Lunkenheimer Co. is showing a new line of valves, which meet the new Texas State Boiler Code, recently put into effect in that state.

* * *

The Foxboro Co. has developed a new system for transmitting flow and control impulses, using air rather than electricity. The new method is quite satisfactory, less expensive and just as accurate, says Granville Lane, southwestern manager for Foxboro.

* * *

Appleton was showing a new type of explosion-proof meter box. Also a new Reelite extension cord for motors, etc., to use on lines up to 600 volts. A collector slip ring set is placed in the reel, in an explosion-proof box.

* * *

Jenkins Brothers are boosting bronze valves equipped with a one-piece screw-over bonnet and slip-on disc holder. Gate valves are fitted with a disc holder in which the disc may be quickly replaced by removing bonnet to get at the disc seat, a composition material. A new design of disc in its iron body valves permits a large number of regrindings, since the disc never overhangs the seat, and seat and disc "grind in" evenly.

Hollup Corp., Chicago, Ill., is offering "Sureweld", a coated and shielded arc electrode in several varieties, for flat welding, flat vertical or overhead work, and also for high speed welding in all positions. A bulletin describing these rods, physical properties, and current rates for use of each in different sizes for different jobs, is available from the company at 3357 W. 47th Place, Chicago.

* * *

Converting the Ford V-8 truck to four- and six-wheel drive systems is the contribution of Marmon-Herrington Co. Inc., Indianapolis. This company installs a driving front axle, a two-speed auxiliary transmission, and other parts necessary to fit this truck to drive from all wheels. In the case of double rear axle, six-wheel trucks, an auxiliary drive shaft is installed between the main drive mechanism of the forward rear axle to drive the rearmost pair of wheels.

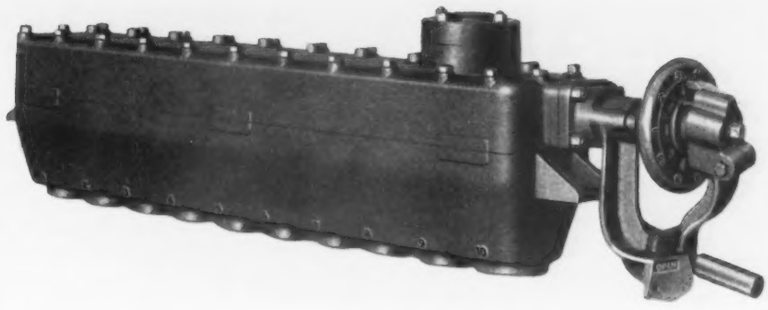
* * *

Johns-Manville, New York, showed a rather complete exhibit of different types of insulating material for stills, piping, towers and other refinery equipment. Refractories, including Firecrete, for furnaces and heating units are being cast in new shapes to simplify and expedite construction.

* * *

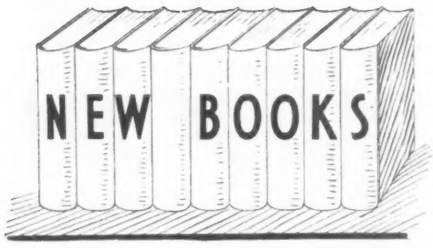
Vapor Recovery Systems Co., Compton, Calif., were showing a combination Conservation Vent Valve, Flame Snuffer, and Entrainment Separator Flame Arrestor for use of on tanks containing light distillates or crudes. The Arrestor consists of a stack of corrugated thin metal sheets, supported in a bank to leave a space between each sheet and the adjacent ones by means of a raised rib pressed into each sheet transversely. The rib is placed at different intervals in succeeding sheets. Vapors pass through the interstices between these sheets, which knock out entrained droplets, and aid in arresting passage of a flame to the tank body.

THE SALL MULTIPLE SINGLE CONTROL DISTRIBUTING VALVE



The new single control distributing valve is designed so that by means of one control you can allow liquids to flow through any one of the 10 outlets shown at bottom. The principle of this valve is such as to provide for any number of flows or combinations of flows with one or two controls. Give us your requirements – we will do the rest.

SALL BROTHERS COMPANY - - ROCKFORD, ILLINOIS



Polymerization

The volume of printed articles in petroleum journals associating the polymerization process with petroleum and hydrocarbon gases has a tendency to dwarf knowledge of polymerization along other chemical lines. To balance the oil man's store of information upon the subject, he should read the newly published American Chemical Society Monograph No. 75 on Polymerization.

The object of this book was to collect facts and theories relative to the subject and its applications. Investigations are now proceeding at a lively rate, it is pointed out in the introduction, and the field is too poorly developed to enable production of a complete encyclopedia; but the book does provide an up-to-date and accurate impression of the field and trends within it.

A discussion is given of the meaning of the term, in which it is stated that the fundamental polymerization reaction was formerly conceived as the self-addition of molecules capable of such a reaction wherein primary valence forces are involved in the union. It was later proposed to include any chemical combination of a number of similar molecules to form a single molecule.

The first five chapters deal with the general nature of polymerization as a chemical reaction. The relation between molecular structure and the rate of polymerization, catalysis and polymerization, the mechanisms of polymerizations, and the structure of polymers as related to the liquid state are considered in four chapters.

The remaining three chapters are concerned with three industries: rubber, synthetic resins, and petroleum. In the latter, selective polymerization in refining, with clays, and with aluminum chloride are discussed. Acid treating, catalytic refining processes, deterioration of petroleum products, of cracked gasoline and oils; inhibition of oxidation, carbon deposition in engines, cracking, synthesis, asphalt, gases, synthetic resins, and production of lubricating oils from olefins, are given individual attention.

The book contains 264 references to other literature on the subject, a profusion of tabular and formular data, a lengthy author index, and 25 pages of subject index. Four authors participated in preparing the book: R. E. Burk, professor of chemistry, Western Reserve University; H. E. Thompson, research chemist, Harshaw Chemical Co.; A. J. Weith, associate director of research, Bakelite Corp.; and Ira Williams, research chemist, E. I. du Pont de Nemours & Co.

Polymerization is a book of 300 pages with blue cloth binding. It is available in the Book Department of National Petroleum News at $7.50.

* * *

Absorption and Extraction

Absorption and extraction are two of the unit operations of chemical engineering in which interphase diffusion plays a large part. Diffusion, along with heat transfer, is said to be the principal consideration in the physical aspect of chemical engineering. Accordingly, Thomas K. Sherwood, associate professor of chemical engineering at Massachusetts Institute of Technology, has made it his object to outline the underlying theory of these processes and to deal particularly with the engineering problems connected with the design and operation of equipment for absorption and extraction.

In addition to this, however, a summary is presented of the available performance data on various types of equipment as well as a section dealing with the basic principles of solvent extraction.

Graphical methods for design calculations are treated in detail and a chapter is devoted to the design of absorption equipment for multi-component systems. The latter chapter includes tables of previously unpublished equilibrium data derived from the Lewis fugacity charts.

The two chapters on absorption equipment include brief descriptions of the principal types, as well as the physical characteristics and pressure-drop data for the more important packing materials. Absorption coefficients for the various systems have been collected from various sources and are summarized and presented in a single standard set of units.

The book contains 278 pages and is illustrated with numerous charts and tables. As it deals with a quantitative subject about 20 numerical examples are given. Absorption and Extraction is available in the book department of National Petroleum News at $3.50 postpaid.

* * *

Petroleum Engineer's Handbook

Practical Petroleum Engineer's Handbook is the title of a new book compiled by J. Zaba, Rio Bravo Oil Co., and W. T. Doherty, Humble Oil & Refining Co. The authors and publisher have felt a growing demand for a handbook containing formulas and other practical information for the benefit of production and drilling engineers.

The co-authors discovered by coincidence that each, for a period of several years, had been accumulating practical data. Their collaboration resulted in the new handbook. A 400-page book, it is divided into seven chapters. The first contains general and fundamental engineering data including mathematics, mechanics, electricity, and other commonly used data. Steam, power transmission and tubular goods are headings of the next three chapters.

Chapters on drilling and production comprise more than half the book's contents and the final chapter deals with pipeline transportation engineering. The new book has much graphical and tabular data and little or no descriptive text and theory. An index adds to convenience of use. Published by the Gulf Publishing Co., Houston, the book is available at $5.

* * *

Practice of Lubrication

The third edition of the Practice of Lubrication, by T. C. Thomsen, has just been published. It has been 11 years since the second edition came out and 17 years since the book was originally published. The development which has taken place in all directions since the previous edition has necessitated considerable alterations and the addition of new matter, the author states.

A number of advancements in refining methods, in lubricants, in testing devices, in bearings, and in engine cylinders are mentioned as reasons for necessitating the revision. The book is of approximately the same length and material is arranged in the same order. Most of the illustrations appear to be identical with the second edition. Special attention has been given to "nomy" (none or very little friction) bearings in an added brief chapter. These bearings are designed with the Michell principle and allow the shaft to turn in only one direction. A brief chapter has also been added on top lubrication which refers to cylinder lubrication.

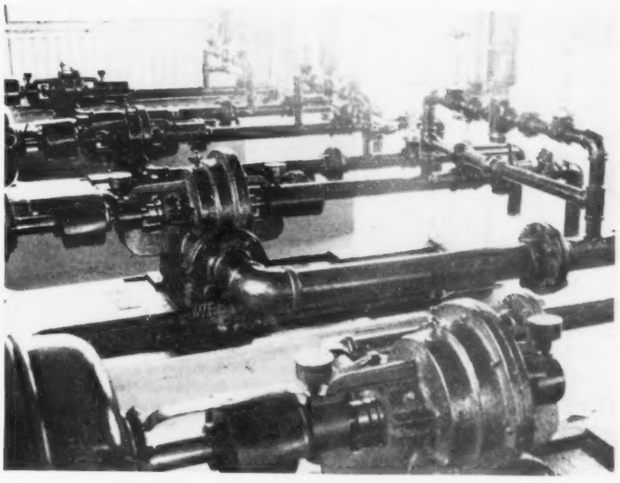
The first chapters are devoted to a general discussion of lubricants including composition and testing. This is followed by general information on bearings of many types. More specific applications are discussed in the latter half of the book, such as engine cylinders, marine engines, railway rolling stock, transmission shafting, machine tools, textile machinery, refrigerating machines, kerosine and diesel engines, and steel and tinplate mills. Oil recovery, storage and distribution, and cutting lubricants are also given some attention.

The book contains 638 pages bound in cloth and is available in the Book Department of National Petroleum News at $6.

Shaft Coupling Guards

In the special products plant of Skelly Oil Co., Lyman, Oklahoma, numerous centrifugal pumps are in continuous operation, driven by electric motors, and equipped with the usual type of flexible coupling where the shafts of the two units join. In order to prevent an employe from becoming entangled with the rapidly rotating member, guards were installed which cover the coupling and bridge the exposed ends of both shafts.

The guards were made of heavy sheet metal, cut in



Over the coupling between motor and pump, the coupling guards are shown supported by a horizontal strap; these prevent workmen becoming entangled in the rapidly rotating shaft

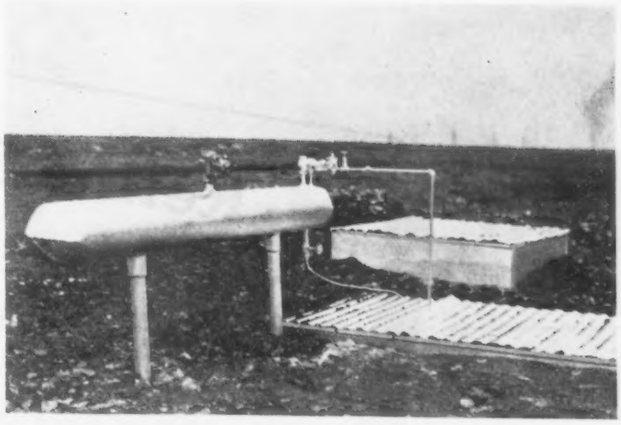
strips sufficiently wide to extend across the full width of the coupling, and long enough that when shaped to conform to the contour of the unit, extends well below the center.

Supports were made of the same weight steel, cut in rather narrow strips, long enough to extend from the bearing cap of the motor to the outer bearing of the centrifugal pump. The strips were attached beneath the coupling guards with rivets, and have holes punched in both ends so that bearing cap bolts may be used to hold them in position.

Alcohol Prevents Freezing Of Gas Line Valves

For years, men in gasoline plants have been fearful of costly interruptions of service in gas lines, both wet gas and stripped residue lines, due to freezing in winter when moisture is present. Alcohol has long been known to lower the ice-forming temperature of water, but only recently has it been utilized in the field to prevent the formation of 'slugs' of ice which often places a whole system out of service.

During the fall months of 1936, the operators of the community block in the South Burbank Field, Osage County, Oklahoma, and the Skelly Oil Co., placed at strategic points over the field, automatic alcohol containers which gradually feed this fluid into the gas lines so long as the gates on the unit are open. The drums were made in different sizes, depending upon the service required of them, but all of them were made of line pipe or casing. The ends were closed in the simplest manner by welding, and they were fitted with filling connections. One shown in the photograph was made of 8-inch pipe, mounted upon two 2-inch pipe standards attached to the body by welded collars. Two small diameter connections were welded to the body of the drum, one on the lower side and the other at the top. A needle valve was attached to the lower connection to set and control the



Alcohol container on Skelly-Carter Burbank Field gas lines, to feed alcohol into lines to prevent valves freezing in winter

flow of alcohol, while the top connection is used as an equalizing line so that fluid will flow from the drum into the line, whether pressure or vacuum is maintained on the gas system.

The amount of alcohol consumed in the entire area during the past winter was very small, averaging less than a gallon per unit each day in service. The cost of the units are small, considering that plant welders can make them during slack days, and operating expense depends upon the price of commercial alcohol. Savings are tremendous, in that no extra labor is required for operation, and due to the lowered freezing point of the fluid in the lines, continuous operation may be had throughout the winter.

Certainly they are a great improvement over the old-fashioned 'line firing' which was in vogue several years ago to melt the 'slug' of ice, only to have it lodge at the lowest point in the line, requiring picks and shovels to uncover for another 'heat'.

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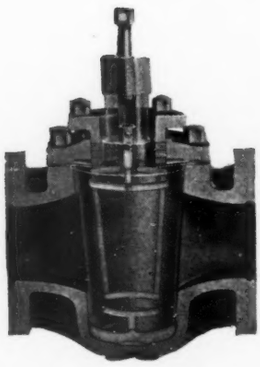
(See also page 56)

Refineries that demand *plus* valves *specify* NORDSTROM VALVES

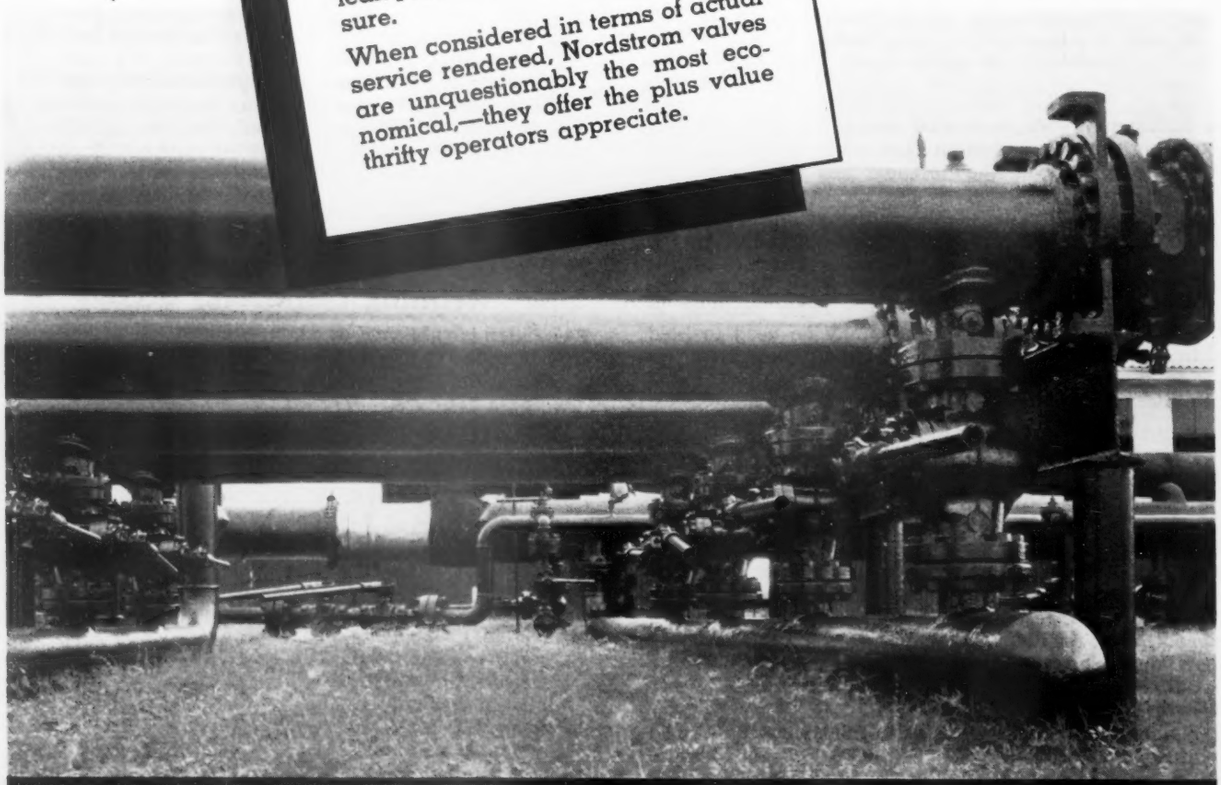
Nordstroms have many advantages over ordinary valves. They are always easy to turn,—a quarter-turn to completely open or close. They are leak-proof regardless of line pressure.

When considered in terms of actual service rendered, Nordstrom valves are unquestionably the most economical,—they offer the plus value thrifty operators appreciate.



Standard type Nordstrom valves embody all the features that make Nordstroms meet every major valve need. A quarter-turn closes them,—they are of simple design with "Sealdport" lubrication,—full-floating plug—positive plug seat. There is a minimum resistance to line-flow and they are non-sticking, non-leaking.

Nordstrom valves on low-stage lines to gas coolers. Hot gas line to the right is 8"; cool gas line on discharge is also 8".



LUBRICATED PLUG

NORDSTROM VALVES

"SEALDPORT" LUBRICATION

PATENTED

MERCO-NORDSTROM VALVE CO.
A Subsidiary of
PITTSBURGH EQUITABLE METER CO.
MAIN OFFICES: Pittsburgh, Penna.
Branch Offices in All Important Cities

Better Motor Fuels From Less Crude Oil

A Joint Problem for Automotive And Oil Industry Engineers

By **ARCH L. FOSTER**
N. P. N. Technical Editor

● A saving to the oil industry in its raw material—crude oil—and improved efficiency in the use of motor fuels in automobile engines and, therefore, a saving to the public, is possible to achieve on the basis of present established knowledge, the Technical Editor of NATIONAL PETROLEUM NEWS brings to the attention of both the oil and automotive industries in the accompanying article.

This utilization of more volatile fuels, and fuels of higher vapor pressure which would give better performance, higher efficiency and less trouble is stymied now by the high temperature fuel systems used in most cars. Methods to provide lower temperature fuel systems are known, he points out, and their possible savings in fuel efficiency appreciated. However, in the styling of today's cars, this possibility has been neglected in favor of stream line appearance, the author contends.

This article is timely because of public attention being now focused on the 1938 models being announced, and it is likely to provoke considerable discussion in both the oil and automotive industries.

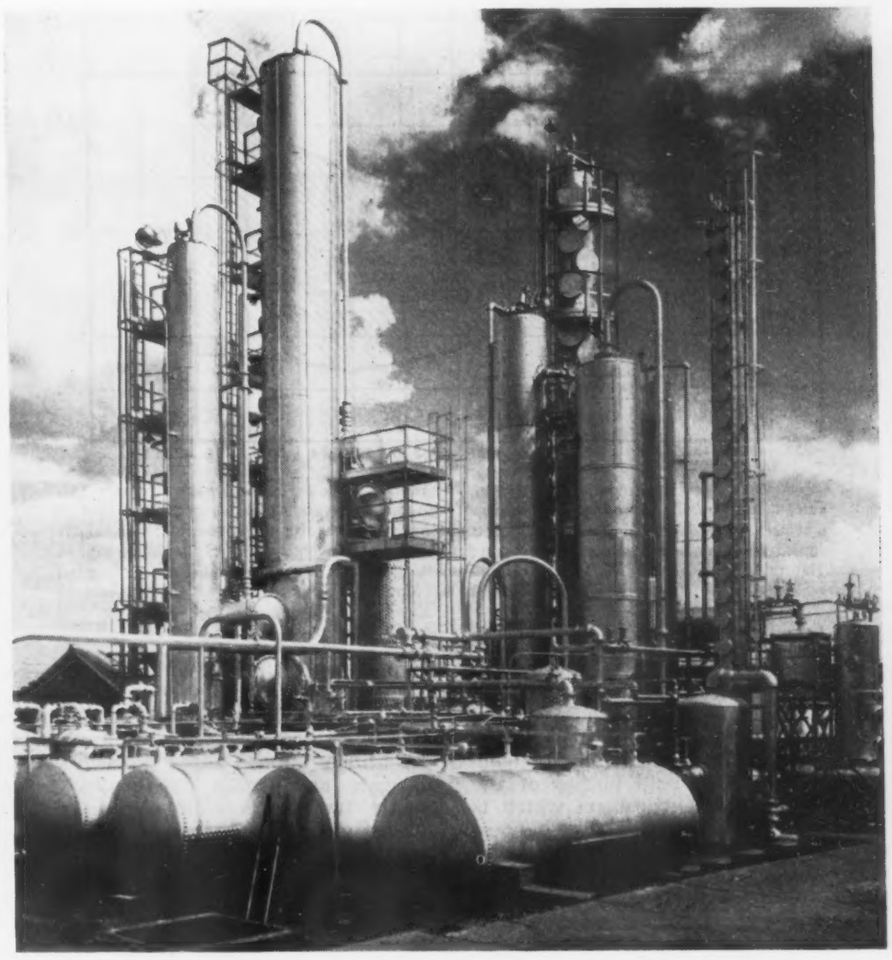
TO suggest to the petroleum industry a means, immediately at hand, to save 11%, or more than 100,000,000 barrels, of its present crude requirements, based on 1936 gasoline production, may appear too improbable and fantastic to warrant serious consideration. Yet the means for saving that amount of crude, or increasing correspondingly the gasoline production, is at hand and has been right along.

Certain artificially imposed restrictions which exist today must be removed to allow these savings to be achieved, which are estimated conservatively, provided the economics of the industry do not change in the immediate future to any radical degree. The extent to which these savings will be realized in the future will be determined by certain economic factors in the conservation of at present wasted — or nearly wasted materials; by the extent to which these materials may be isolated and recovered; by the action of the automotive industry in removing the artificially imposed restrictions which for some years have been a brake on the wheel of progress.

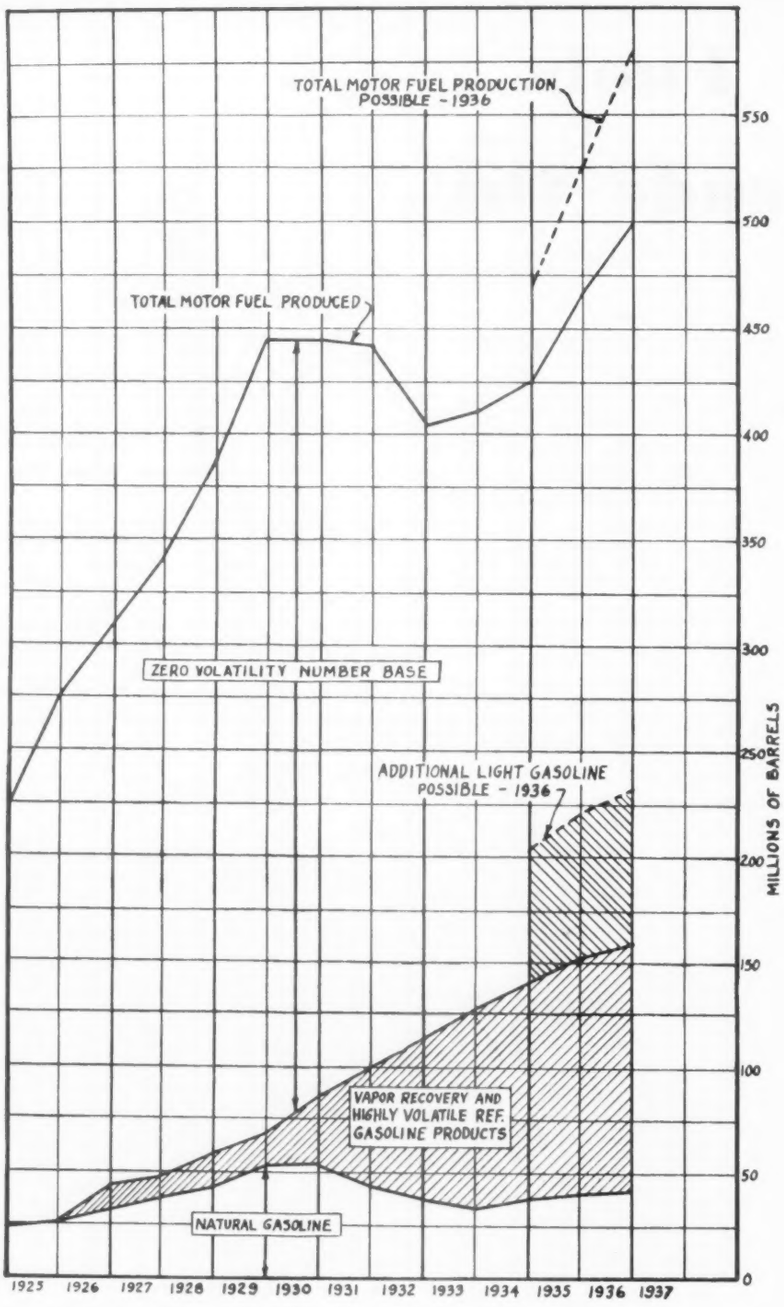
When we consider that this last-named industry stands to reap advantages by such a removal, quite as useful and even more valuable to it than those which it is believed will accrue to the petroleum industry, the proposition seems to narrow down to one wherein everyone, including the consumer of both industries' products, has everything to win and nothing to lose.

While, to cover the general picture as it concerns both industries in this article, both of the terms "vapor pressure" and "volatility" have been used in the discussion, these two expressions refer to different phases of the same problem, and are not interchangeable. One technologist has defined "volatility" as the property which affects the behavior of the fuel *after* it leaves the carburetor jet, its vaporization, etc., in the mixture in manifold and cylinders, affecting combustion, distribution and such factors.

"Vapor pressure" refers more espe-



A vapor recovery plant in Continental Oil Co.'s Ponca City, Okla., refinery, where light products are recovered to make more volatile motor fuels. Refining economics can be greatly improved by utilizing more of the material recoverable from plants of this type, when automotive fuel systems are designed to handle them satisfactorily. This photo took highest industrial award before the National Photographers Ass'n. recently. Photo by Fehrenbach, Continental Oil Co., courtesy Acme Newspictures



These curves show the amounts of zero volatility refinery gasoline, refinery vapor recovery gasoline, natural gasoline, produced up to 1936; also the total production of motor fuel and of light refinery and natural gasoline which could have been recovered and used, if appreciably higher vapor pressure motor fuel were practicable now. This chart is an extension of Fig. 3, "Natural Trends", by T. W. Legatski, Phillips Petroleum Co., as presented before the Natural Gasoline Ass'n., May, 1936

cially to the properties of the fuel which affect vapor lock, vapor losses, etc., *before* the fuel reaches the carburetor, and involves the relationship of fuel system temperatures to fuel economies and engine operation. Yet both phases of the subject constitute the problem which is under discussion, from the point of view of the economics of the two industries.

The means referred to is that of conserving, of utilizing for its most valuable purpose, the immense quantities of light, volatile materials available in our refineries and natural gasoline plants. Conservation is a sadly overworked word, yet its practical application in making each barrel of crude and each cubic foot of "wet" natural or casinghead gas yield the maximum of utility and economic return has not been worked enough.

The automobile manufacturing industry must provide the ways and means to utilize higher vapor pressure fuels in cars and trucks universally. Inadequate fuel systems impose restrictions on gasoline raw materials. Besides excluding raw materials, inadequate systems result in vapor lock, lost mileage, etc. Better systems, besides making better use of present gasoline would aid in paving the way toward better and cheaper fuels. The means to this end are known, have been pointed out repeatedly to both industries. The various advantages are known and have been evaluated at least within reasonable limits of accuracy, the results are in public record for all to read. The thing needed now is action to translate these facts into terms of motor car designs and motor fuel compositions. To borrow the expression of a well-known political spell-binder, let's take a look at the record.

A comprehensive investigation of the cause and cure of vapor lock was carried out, during the late 20's and early 30's, the work of O. C. Bridgeman, of the U. S. Bureau of Standards being especially well known, Bridgeman[1], operating several cars on the road in summer, using a series of selected fuels, determined that for atmospheric temperatures of 100°, 85°, and 75° F., the majority of the cars in 1933 were limited to fuels of vapor pressures not higher than 8 lbs., 10 lbs., and 11.6 pounds Reid, respectively.

FOR the *best* cars in 1931, he found that fuels of Reid vapor pressures varying from 11.4 lbs. at 100° F. to 20.3 lbs. at 65° F. atmospheric temperatures were practicable, and gave no vapor lock. These figures agreed essentially with those of Brown, reported in 1929, who estimated permissible pressures of 10 pounds at 100° F. to 12 pounds at 75° F.

Bridgeman analyzed the design of the fuel systems of the cars on the road at the time of his studies, and pointed out in detail the changes in design which manufacturers would have to incorporate in order to reduce fuel system temperatures. Fuel pumps and carburetors could be placed elsewhere than immediately adjacent to exhaust manifolds and lines; fuel lines from rear tank to pump could be placed outside the frame instead of inside near the exhaust line; shields and insulation could be used on carburetor bowls and intake manifolds, to cool the fuel and the mixture, increasing the volumetric efficiency of the engine. These proposed principles for revising the then existing fuel systems were, where utilized in later models, fairly satisfactory. However, for the present and future situation, the re-design must be more in the nature of a major operation than merely a matter of "teeth straightening", say our best fuel technologists.

That the automotive industry has taken advantage of this information in considerable degree in fuel system designs is well known. Brown[2] reports that, from about 1930 to 1935, the drop in mixture temperature in automotive fuel manifolds averaged about 35° F., allowing a realization of about 9% increase in acceleration and power in the car. This reduction varies widely in different makes of automobiles of course. Some of the recent cars, as data soon to be released will show, have taken much less advantage of the information made available than have other models.

However, the means adopted to avoid vapor lock in cars where fuel systems operate at too high temperatures, in many cases have "robbed Peter to pay Paul". In a great many instances temperatures have not been appreciably reduced. Rather, fuel systems have been designed to boil off the light fractions, to eliminate vapors from the system without vapor locking the car, instead of avoiding vapor formation by maintaining lower fuel system temperatures.

Data on the results of recent vapor loss

EQUIFLUX

That is a new word in the refiner's language and it is a new furnace for the refiner's profit —it makes cracking of heavy oil easier than ever before

Why?

Because in the Equiflux furnace new-found principles of combustion and heat transfer are realized and applied for the first time to the heating of oil

The results top all past records of cracking plant performance

To Universal men go the credit for inventing and developing the Equiflux furnace

To you go its unmatched benefits if you want them

The way to cash in on these benefits is to install the Dubbs cracking process (with Equiflux furnace) in your plant

The best time to do it is

Now!

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Tremendous quantities of the volatile constituents of natural gas and petroleum can be saved in plants such as this, instead of being returned to gas lines to be used as plant, industrial or domestic fuel, a far less economical use than as motor fuel. This is the Carter Oil Co.'s gasoline plant in Fitts Pool, Okla.

tests have not been released. Information obtained, however, from various sources by investigators point to total losses of fuel of several per cent incurred through evaporation in the fuel system. Such losses were accompanied in each case accompanied in each instance by a measurable drop in the octane rating of the fuel reaching the cylinders. The loss in power return to the car and its user by this loss of the most volatile and highest anti-knock portion of the fuel is serious.

The literature is rich in data showing the advantages to be obtained through both the automotive and refining industries utilizing the volatility available to the gasoline producer in the types of engines and fuel systems which *can* be designed to use that fuel profitably. In 1935, Brown[4] showed that a decrease of 50° F. in mixture temperatures in the manifold would result in an increase in power output of about 12%. In reaching this conclusion two fuels were used of almost exactly the same octane ratings by laboratory test; but a difference of 6 to 8 octane numbers was found in road performance of these fuels. By special cooling arrangements on the fuel system and by taking advantage of the better performance of the more volatile fuel, engine power was increased, basing values on top speeds attained, from 81 h.p. at 77.4 miles per hour, to 93 h.p. at 80 miles per hour, the increase in power being approximately 15%.

Two per cent of this increase was adjudged to be due to the 2° greater spark advance. The 13% increase is accredited to increased volumetric efficiency due to lower mixture temperatures. Superchargers are used on some cars, now, to obtain higher volumetric efficiencies. These data indicate no need for superchargers to obtain the above increase, *if manifolds and fuel systems are properly cooled.* At the same time Brown found that, at low car speeds, fuel consumption is somewhat increased by more volatility in fuel; consumption is about the same at higher speeds.

Summing up his results in 1935, Brown states that "18 volatility numbers are equivalent to 10 octane numbers"; in acceleration an increase of 50 volatility numbers (Oberfell and Alden's numerical difference between the 50% evaporated temperature and 284° F.) gives a 50% increase in acceleration; increase in octane number of the fuel of 35 numbers gives a 20% increase in acceleration. These data are based on results using a fuel of 50% evaporated at 138° F. in comparison with one of 50% evaporated at 260° F., or with volatility numbers of 146 and 24, respectively.

MacCoull[3] found that, by taking advantage of both the higher octane number of the more volatile fuel he tested and the lower manifold temperature practicable, a gross gain of 18.7% in power output was obtained from a 43° F. lower manifold temperature. Finding 7.2% greater power to be due to the increased octane number, the lowered temperature accounted for a 11.5% power increase, corresponding to an increase of 11.7% found by Brown. Brown points out that a decrease of 4.3° F. in mixture temperature, therefore, means about 1% increase in maximum power output, in fuel systems and engines designed to take advantage of the temperature lowering that is practicable. He also shows that an increase of three to four pounds in the vapor pressure of fuels, now averaging between nine and ten pounds Reid, is about all that can be accomplished.

These advantages in power output without changing essential factors in engine design, may accrue, then, to the automotive engine builder by utilizing fuel system design principles pointed out by these investigators. Some designers have taken advantage of these facts to improve their systems, as has been mentioned above. It may or may not be practicable to design systems which will use *all* the volatility available. Let us see what the investigators say about this.

If all the butane available at refineries is used in motor fuels, the average vapor pressure of the resulting fuel will be about 13 pounds Reid. Using all butane available from all sources would bring up this average pressure to over or about 20 pounds Reid. The latter is obviously out of the question, practically speaking. But investigation has shown that, for all but possibly the highest summer temperatures, 13 pounds is entirely practicable if proper precautions are taken with fuel systems, and in engines designed to utilize the added potential efficiencies.

These necessary changes have been pointed out repeatedly by competent tecnologists. However, instead of venting carburetors so that light material is vaporized to the atmosphere by the high temperatures, these fuel system temperatures must be reduced so that this light fuel, highest in octane number equivalent and in volatility, will reach the engine cylinders and be burned to give the added power and mileage, technolo-

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gists point out. The gasoline consumer is paying for fuel and fuel efficiency for which he now receives no return.

Speakers on several occasions have indicated that to re-design fuel systems is costly and adds to the price of the finished car. There appears to be a discrepancy between this attitude, however, and the findings of Bridgeman, Brown and other investigators that the worst offenders in vapor lock and vapor loss are in most if not all cases the cars in the higher and highest price brackets.

In other words, the cheaper cars have the best fuel systems from a vapor lock and vapor loss standpoint. Such findings do not support a contention that to design systems to save rather than waste fuel is a too expensive proposition. The potential gain in power output would far more than offset the increased cost of engine design and manufacture, technologists believe.

From the data presented, it is obvious then that the utilization of more volatile fuels is stymied in great measure by the bottle-neck of high temperature fuel systems; that relatively high and unnecessary fuel losses are experienced by the motorist, when the fuel industry attempts to give him a more efficient and more satisfactory fuel. It is necessary for fuel systems to be redesigned in the light of information disclosed during recent years, before the fuel constituents now available to the oil industry in huge quantities can be used.

In fairness it must be said that the fuel system designer, in a great many cases, has taken considerable advantage of the information supplied him by fuel technologists. Carburetors are placed in cooler positions in some cars; fuel pumps and fuel lines are also better located. Lines in some models pass around the engine, in front of it near the radiator, to be cooled by the air stream there. Lines are laid outside the car frame for better cooling, on the side opposite from the exhaust pipe to avoid overheating.

However, these practices have not been universally adopted by any means; nor has the maximum practicable advantage been taken of the information available and the design principles which have been made obvious. In fairness to the engine and fuel system designers, too, it must be pointed out that they are subject to the so-called "style engineers", who in the last analysis apparently control the design of the car, for sales reasons. Narrow hoods, narrow louvers, streamline effects, all now have strong sales appeal, say automotive sales departments. W. G. Lovell[4], General Motors Corp., pointed out before the Natural Gasoline Assn. of America in 1936 the serious effect of style engineering on the feasibility of engineering fuel systems to avoid vapor lock and fuel losses. More recently the matter has been put by a widely known automotive engineer directly before a meeting of technologists of the two industries. He stated flatly that the fuel system engineer has little if any chance to convince executives of the undesirability of styling cars so that vapor lock is imminent and volatile fuels are impracticable, when the style engineer shows that style design of the present day helps immensely in selling cars.

Therefore the fuel system engineer must make the best of conditions which he faces and which he cannot now change. To his credit may be placed the work of improving many fuel system conditions in the face of severe handicaps, of improving engine performance and utilizing to some degree the more volatile fuels. But he has a much longer road to travel before he improves automotive and refinery fuel economics satisfactorily.

He begs the question when he avoids vapor lock by venting a portion of the fuel to the atmosphere in preference to reducing fuel line temperatures, at the expense of engine power and efficiency, wasted fuel, and higher costs for refiner and consumer alike. If the tendency is toward more and more volatile fuels, as facts indicate the tendency is and inevitably will be to a greater degree, the problem must be solved by elimination of the errors of design, and not by the introduction of a new inefficiency to eliminate, reduce or make less obvious and noticeable another serious inefficiency.

Oberfell[5] estimates that 63% of our present motor fuel is obtained from zero volatility number refinery production, that is, straight-run and cracked fuels; 23.4% from refinery volatility material recovered in the refinery; 6.3% butane-free natural gasoline, and 7.3% butane from any and all sources. Clayden[6] in his First Report of the Automotive Survey Committee shows that 78% of cars on the road in 1935 would operate satisfactorily on considerably more volatile fuels than were generally available. He believes that this 78% of owners should not be penalized in fuel quality and efficiency because 22% of the cars will operate only on low volatility, low vapor pressure fuels. Very evidently this 22% figure has been reduced since that report, giving all the more reason for supplying more volatile fuels.

Some disagreement has been voiced between automotive and refining engineers as to the vapor pressures now permissible. In 1934 the Vapor Lock section of Technical Committee A, Committee D-2, of the American Society for Testing Materials, proposed filling station vapor pressures of 8 lbs., 10 lbs. and 12 lbs. for maximum atmospheric temperatures of 75°, 85°, and 100° F., respectively. Brown, and his position is confirmed by Bridgeman's work—stated that the Technical Committee's recommendations are low even for 1934 cars. He stated, in part: "If all cars on the road were of as good design in regard to vapor lock characteristics as the average of the best cars that have been tested, these vapor limits could be raised 3 or 4 pounds, corresponding to 11 lbs. for 100° F., 14 lbs. for 85° F., 16 lbs. for 75° F., and 19 lbs. for 65° F., and still have complete freedom from vapor lock."

Mendius and Ainslee[7] suggested limits varying from 7 lbs. at 110° F. to 14.5 lbs. at 60° F., in the light of which Alden stated that these conditions will create a demand for fuel which would use not only all the butane extracted at that time, but all the butane available for recovery.

In terms of these various estimates and calculations, it is interesting to make tentative calculations to find out how much more fuel would be available from our present supplies of crude and natural gas if all portions of it were used in motor fuel that could be used with the permissible pressures in properly designed fuel systems.

If the quantity of butane available equals 20% of our total possible motor fuel production and less than 8% of it is now utilized in present production, this present production is only about 88% of the possible figure.[5] Our gasoline production for 1936 was nearly 505,000,000 barrels, from all sources. Adding the unutilized butane would increase that total to about 577,000,000 barrels, or a gain of 72,000,000 barrels. Correspondingly, assuming the same proportions in 1934 and 1935, the annual productions of gasoline would have been raised by 64,000,000 and 68,000,000 barrels, respectively.

For 1936, this gross possible production represents 53% of the total crude, 1,068,000,000 barrels, run to stills that year. This increase in gasoline production could have been accomplished without refining a single additional barrel of crude. Or, if 505 million barrels of gasoline is the total demand by consumers, then this amount could have been produced from about 950,000,000 barrels of crude, a saving in the neighborhood of 118,000,000 barrels of a raw and irreplaceable natural resource.

The saving to the oil industry would include more than avoiding the lifting cost on this 118,000,000 barrels of crude left in the ground. The cost of processing this amount of crude is more than the cost of recovering the equivalent amount of light refinery and natural gasoline material from at present mostly wasted sources. In a balanced market sensitive to manufacturing and market conditions, this saving in cost would likely pass to the consumer in lower retail prices.

In these days of much talk and effort on conservation, such figures are weighty indeed. The practical realization of them, or of any part of them, hinges entirely on the ability of the ultimate unit of consumption, the motor car and truck, to utilize the fuel properties which will obtain when all or any portion of this light material, now unused, is included in the "average" fuel marketed. The saving in refining costs will also undoubtedly be of sufficient magnitude to make the proposition a most interesting and valuable one to the refiner.

We doubt, however, if the refiner's saving on his overall refining costs would be as great as the increased returns in power, flexibility and performance of automotive equipment as indicated by the figures mentioned above. Which is to say, the automotive industry stands to receive greater returns from the proper utilization of available fuel materials than does the refining industry.

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"GADGETS" STEAL THE AUTO SHOW

Automatic Transmissions, Steering Column Shift Levers, Coiled Rear Springs, Winter Air Conditioning Are Among the Features Of The 1938 Automobiles

By JOHN W. THOMPSON
N. P. N. Staff Writer

NEW YORK, Nov. 1

YOU can mark down 1938 as the gadget year among automobiles. For the 38th annual National Automobile Show, which closes its doors in New York on Nov. 3, gives conclusive evidence of that fact. It was the gadgets that stole the show. It was the automatic transmissions, the cars with winter air conditioning, the coiled rear springs, and the ever-changing radiator grille designs which carried the burden of interest at the show this year.

To say the show was held at Grand Central Palace is putting it narrowly. True, this was the "main tent"; but in reality, Oct. 27, the opening date of the show, found miniature auto shows splattered all over mid-town New York.

General Motors, following its usual custom, displayed at the Palace and also set up shop in New York's swankiest hotel, the Waldorf Astoria, to show its 1938 car models and refrigerators without fear of competition.

Then down Lexington Ave. in the Chrysler Building, Plymouth, DeSoto, Dodge and Chrysler models for 1938 were shown, in addition to their display at the Palace.

Running simultaneously with these the Ford, Lincoln-Zephyr, and Lincoln were on display at the Ford metropolitan showrooms on Broadway, in a location that was quite a bicycle ride from the other exhibits. Ford is not a member of the Automobile Manufacturers Assn., which sponsored the show at the Palace, did not have space there.

The many shows about town featured action displays showing parts of the cars in motion. Almost every car exhibit had its nickle-plated cut-away chassis before which strutted a well-groomed, carnation-in-the-button-hole, Hollywood-looking master of ceremonies, who, with pointer in hand recited a well memorized lecture about the-only-car-in-its-price-class-that-has this feature.

Many of the action displays were novel in design. There were numerous cut-away sections of engines. At the Oldsmobile exhibit, the public was given an opportunity to operate the automatic transmission control lever and to see just what the various lever motions accomplished. DeSoto exhibited a complete car in which the entire side, hinged at the bottom, swung down to reveal a complete cross section view.

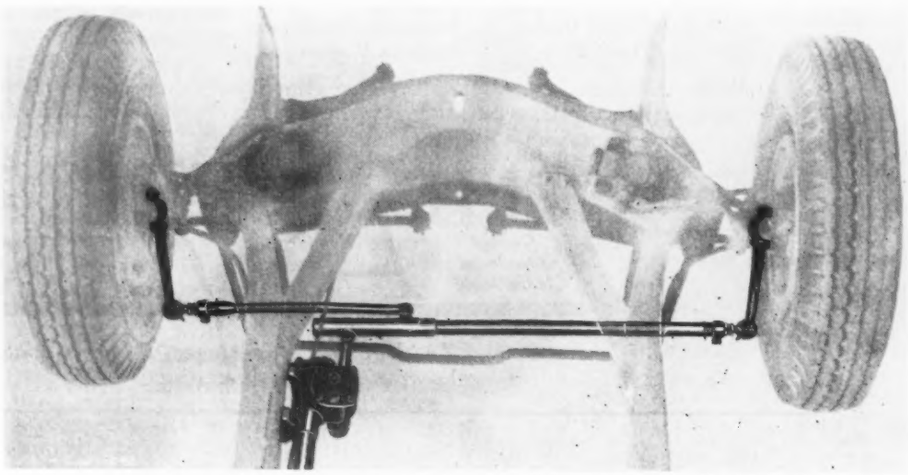
Studebaker displayed a car on which the entire top section was raised in lid fashion and the car tilted forward so that the interior could be easily seen. The Chevrolet exhibit featured a plated chassis mounted on axes which turned it over as the complete display revolved on a turn table. At the Ford exhibit, a cutaway chassis was suspended vertically from the ceiling, nose down, giving the curious a new angle, at least, from which to view what they had already seen in almost every other position.

At the Grand Central Palace were on exhibition approximately 200 cars and chassis representing 20 makes of American automobiles, one French car, the Talbot-Royal, and one Italian car, the Fiat. These cars occupied the first and second floors of the building, while on the third floor were seven makes of commercial vehicles, about 75 accessory parts, and service displays, and special exhibits on safety, traffic control and driver tests.

On the fourth floor, 50 trailers, representing about 15 manufacturers, were shown. This exhibit, which last year was one of the hits of the show judging from the steady stream of visitors, found the aisles a little less populated this year, which may be an indication of the contention of many that the trailer except for commercial purposes, has passed its peak as a boom industry.

The decision of the Cord Corp. to drop from the car manufacturing picture finds two familiar names missing from the 1938 roster—Cord and Auburn. In their place have come Hupmobile, which re-enters the picture after a year's absence, and the American Bantam a newcomer.

There are 48 American car models for 1938, as compared to 55 last year. However, there has been an increase in the number of corporations manufacturing cars, from 11 last year, to 12 this year.



The new direct cross steering design now used on the Buick Series 40 and 60 models

Looking at the 1938 engines, Cadillac has discontinued its V-12 power plant. Graham, which last year had three engines and four models, has whittled this down to one engine (with and without supercharger) and two models. Chrysler no longer has the Airflow, which has simplified its engine line. The Cadillac V-16 engine block is designed with a 135-degree angle between the cylinder banks, permitting a lower center of gravity and a greater space in which to locate the auxiliary engine units.

In 1937 Chevrolet featured in its engine a cylinder combustion space which made possible a more complete burning of the fuel mixture. Pistons were beveled to add to this improvement. For 1938, Buick takes a similar step with a piston with a crowned top which decreases the combustion chamber depth on the side of the cylinder opposite the spark plug.

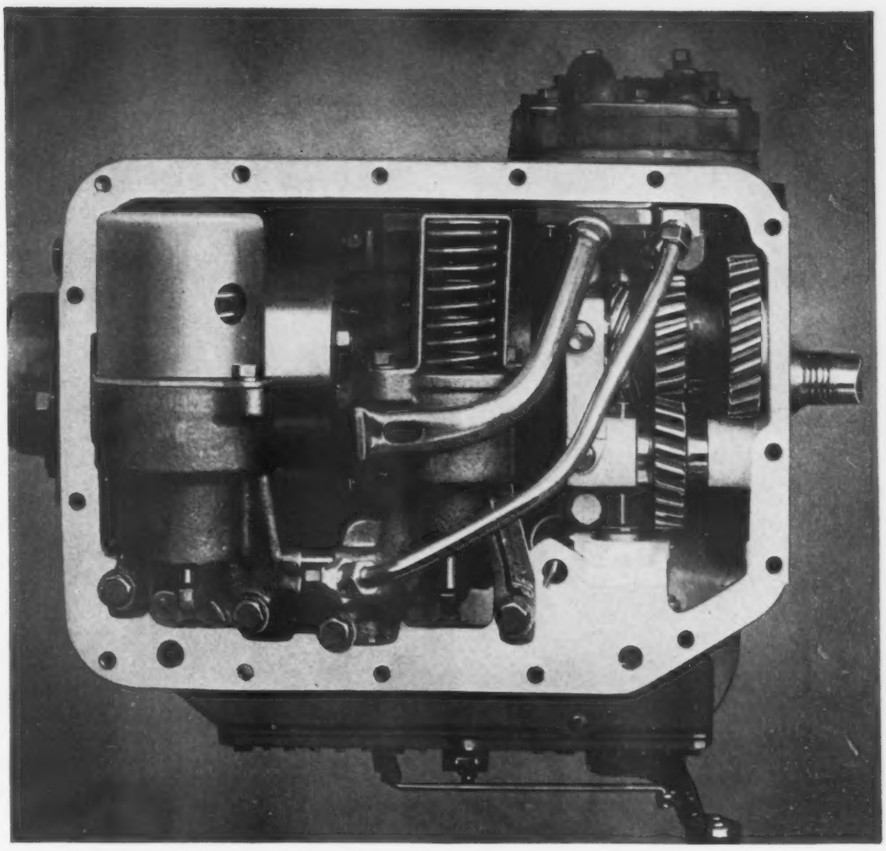
COMPRESSION ratios are reported to have increased again, now averaging 6.33, as against a former 6.25, with the rated r. p. m. of the engines increasing from 3556 to 3570.

Carburetion has been improved on several models this year by putting the carburetor metering pin under vacuum control, instead of by a mechanical hook-up to the accelerator. This has been done because of the dependence of the metering characteristics on the amount of vacuum in the venturi.

New users of hypoid rear axle for 1938 include Graham, Hupmobile, Lincoln-Zephyr, and the Buick 80 and 90. Out of the 48 models in 1938, 32 are equipped with hypoid axles.

Among the three chief low priced cars, Chevrolet and Plymouth have hypoid axles. Ford continues with a spiral bevel type similar to last year's design. Ford, incidentally, offers two distinct cars for 1938. While both cars have the same chassis and wheel base, the bodies have been given a distinct appearance. The Ford 85 horsepower engine is available in the deluxe or standard models, while the 60 horsepower engine may be obtained only in the standard model car.

Aluminum cylinder heads are now being used in 12 of the 48 models. These include the American Bantam, Chrysler Custom Imperial, the 85 horsepower Ford, Graham, Lincoln and Lincoln-Zephyr, all Packards except the Six, and Pierce Arrow. The remaining models have cast iron cylinder heads.



Oldsmobile's new automatic safety transmission mechanism. Shifting of gears is accomplished by a lever located directly underneath the steering wheel. The device is offered as optional equipment on both the Six and Eight. A similar transmission is available as optional equipment on the Buick 40 model

Pistons, for the most part, are of aluminum. The exceptions include cast iron on Chevrolet and Willys, steel on Ford and Lincoln-Zephyr, and chrome nickel iron on the Pontiac.

With few exceptions, connecting rod bearings are made of babbitt or steel backed babbitt. On the Ford, Lincoln, Lincoln-Zephyr, and Packard Super Eight and Twelve, these bearings are made of steel backed copper lead, while on the Graham a steel backed cadmium silver material is used.

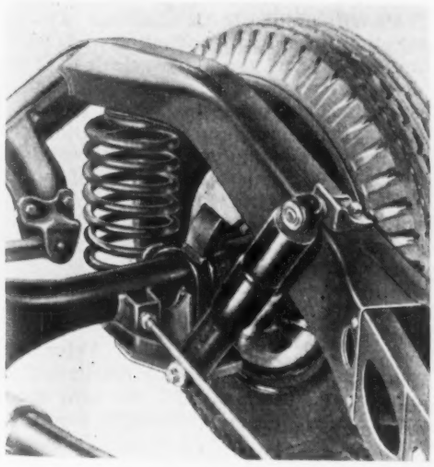
Last year Willys, Ford, Hudson and Terraplane broke the ice by placing the battery under the hood. For 1938, these same cars continue this practice, with the addition of the following new converts: Buick, LaSalle, Graham, Cadillac V-8, Pontiac, Lincoln-Zephyr, and Oldsmobile. Chevrolet and Chrysler, while their batteries still remain under the floor of the front compartment, have added an easily removable cover to add to the accessibility of the battery.

Oldsmobile particularly has made provision for an air duct to supply cool air to the battery.

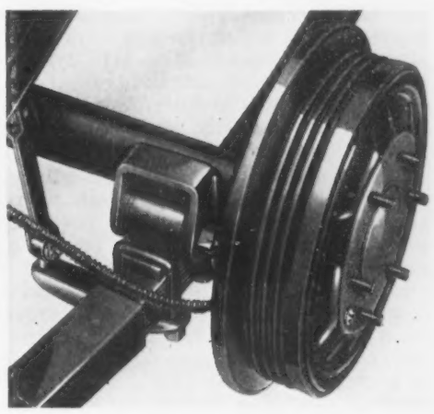
In regard to spring suspension, probably the most revolutionary development among the 1938 cars is the Buick rear springing. Coiled springs are used, instead of the leaf type, and the result has been the elimination of eight shackle lubrication points. This "torque-free springing," as it is called, works in combination with large transport airplane type shock absorbers and a sturdy horizontal radius rod which takes all side stresses off the spring.

On the Packard Six and Eight, known as the "Junior" cars, a new type of leaf spring is used which, it is claimed, practically eliminates static friction. At the ends of the spring leaves there are cup-like depressions. Some of these contain rubber and some oil-impregnated bronze.

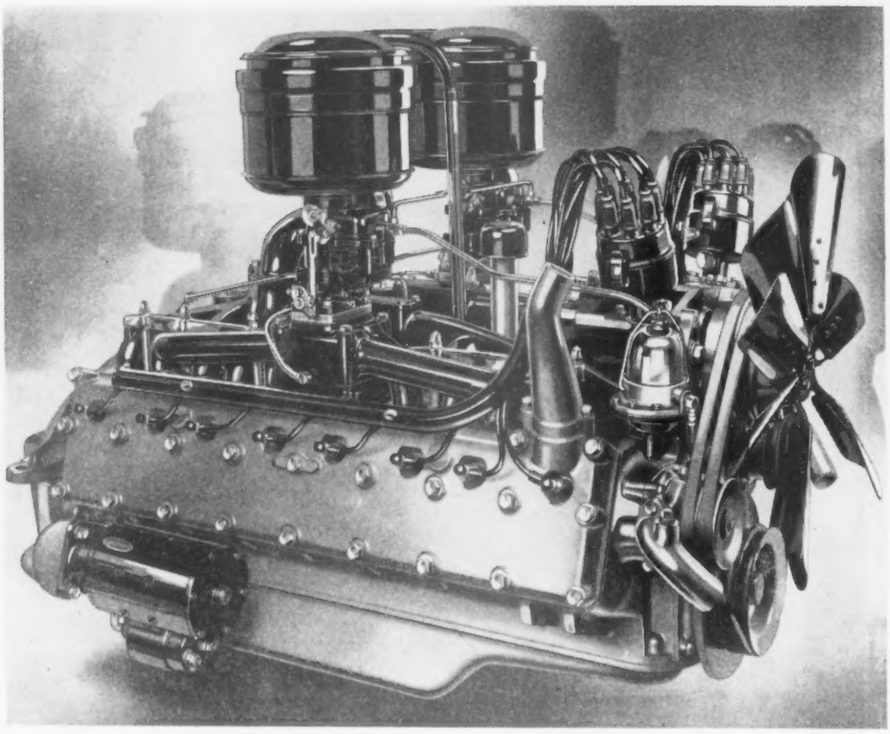
The transmission overdrive continues either as standard or optional equipment on the Chrysler, DeSoto, Nash-Lafayette, Nash, Pierce Arrow, and Studebaker



An innovation on the 1938 cars is the use of the coiled rear springs on the new Buicks. Eight shackle lubrication joints have been eliminated by the adoption of this design



Rear springs on the 1938 Chevrolet are completely insulated from the housing by rubber bushings and washers. The need for adjustment, lubrication and service at this point no longer exists



The 1938 Cadillac V-16 engine. Cylinder banks are mounted at a 135-degree angle, resulting in practically a "flat" power plant. Although the engine is 250 pounds lighter than the former V-16, and 10 inches shorter, it still develops the same 185 horsepower

Commander Six and President Eight. The Hupmobile Eight also offers an overdrive as standard equipment, while on the Six it is optional.

Studebaker for 1938 has turned its transmission on its side so as to eliminate the hump in the floor of the front compartment.

The big news on the 1938 cars, of course, is the adoption of the so-called automatic transmission, and the trend toward moving the gear shift control lever up under the steering wheel where it moves in an arc from the steering post. This development, in various forms and designs, is standard equipment on LaSalle and Cadillac, and optional equipment on Studebaker, Nash, Graham, Oldsmobile, Pontiac, Buick 40, Hudson and Terraplane.

THE optional control lever under the steering wheel on the Pontiac and LaSalle and Cadillac is simply a manually controlled lever which operates the shift through rod linkage. The "H" type of shift still applies to this unit except that the lever now sets in a horizontal position rather than vertically, as in the conventional shift lever.

The Evans system, used optionally on the Studebaker, Nash, and Graham, retains the conventional shifting movement through a short vertical lever located at the center of the instrument panel, and is directly connected to the transmission through a mechanical tie-up. The movement of the hand lever, however, controls the vacuum, so that in reality the system is practically a power booster, or servo mechanism. Power for shifting with this system is obtained through the engine inlet manifold exhaust action, which creates a vacuum on both sides of the operating piston.

The "electric hand" used by Hudson and Terraplane optionally since 1935, continues with the addition of an automatic clutch which enables the device to "feel" its way into mesh without an abutment of the gears and causes gear shifting to occur at just the proper time in regard to clutch disengagement.

The General Motors automatic transmission, first offered optionally on the Oldsmobile Eight during the summer of 1937, is now optional equipment on both the Oldsmobile Six and Eight and on Buick 40. In this new type of transmission, sliding gears are used only to secure forward or backward movement in all speeds. Speed changes are obtained through two sets of constant-mesh planetary gears arranged in tandem. Each set of gears is capable of giving two different speed ratios, and the two sets working in combination permit a four-speed possibility.

The speed changing action is brought about through oil pressure, and the selection of speed ratios is obtained automatically through a speed governor which directs the flow of oil to the small cylinders and pistons, through which power is obtained to work the transmission speed clutches.

The foot-operated clutch is used only for stopping and starting, all other speed changes being made directly with the hand lever or automatically without the use of the clutch. There are two forward positions on the lever sector, one for low speed with automatic transfer to second speed, and the other affording low, third and fourth speeds. The latter is a direct super-drive designed mainly for quietness and engine economy.

Lincoln-Zephyr, retaining the hand shift lever, has tilted its transmission slightly and also moved it forward along with the engine, making it possible to bring the shift lever up through the enclosed center section in the front compartment. By bending the shift rod, it is made to extend out into the front compartment just under the steering wheel.

Nash offers a new heating system which brings the first winter air-conditioned car on the market. The new heating system is a pressure operated device consisting of an air filter, motor-driven fan, and a hot water heating element. The assembly is mounted under the cowl and is connected with the cowl ventilator by means of a "stack" arrangement.

When in operation, the system forces air through the stack, where it is spun to remove the moisture, then through the filter and past the fan into the car interior.

Hoods have undergone a variety of treatments and radiator grills are noticeably being subdued on certain models, particularly the Lincoln-Zephyr and Willys.

WITH few exceptions, the 1938 hoods open in such a way that the station attendant must do his engine servicing in a well. The alligator type hood, which came into the picture so strongly on the 1937 cars is this year used on Cadillac, LaSalle, Ford, Lincoln-Zephyr, Graham, Hupmobile, Studebaker and Willys.

On the Chevrolet, American Bantam, Lincoln, Oldsmobile, Packard and Pierce Arrow, the hood lifts from the side leaving the entire side of the engine compartment exposed, as in the older type construction. On the remaining cars, including Buick, Chrysler, DeSoto, Dodge, Plymouth, Hudson, Terraplane, Nash, LaFayette, and Pontiac, the top section of the hood lifts from either side with the vertical sections being held in place by bolts. The conventional type of latch handles, located in the vertical hood sections, hold the hinged upper sections in place. A turn of this handle releases the upper section so that the finger tips can be placed under the edge to raise the hood.

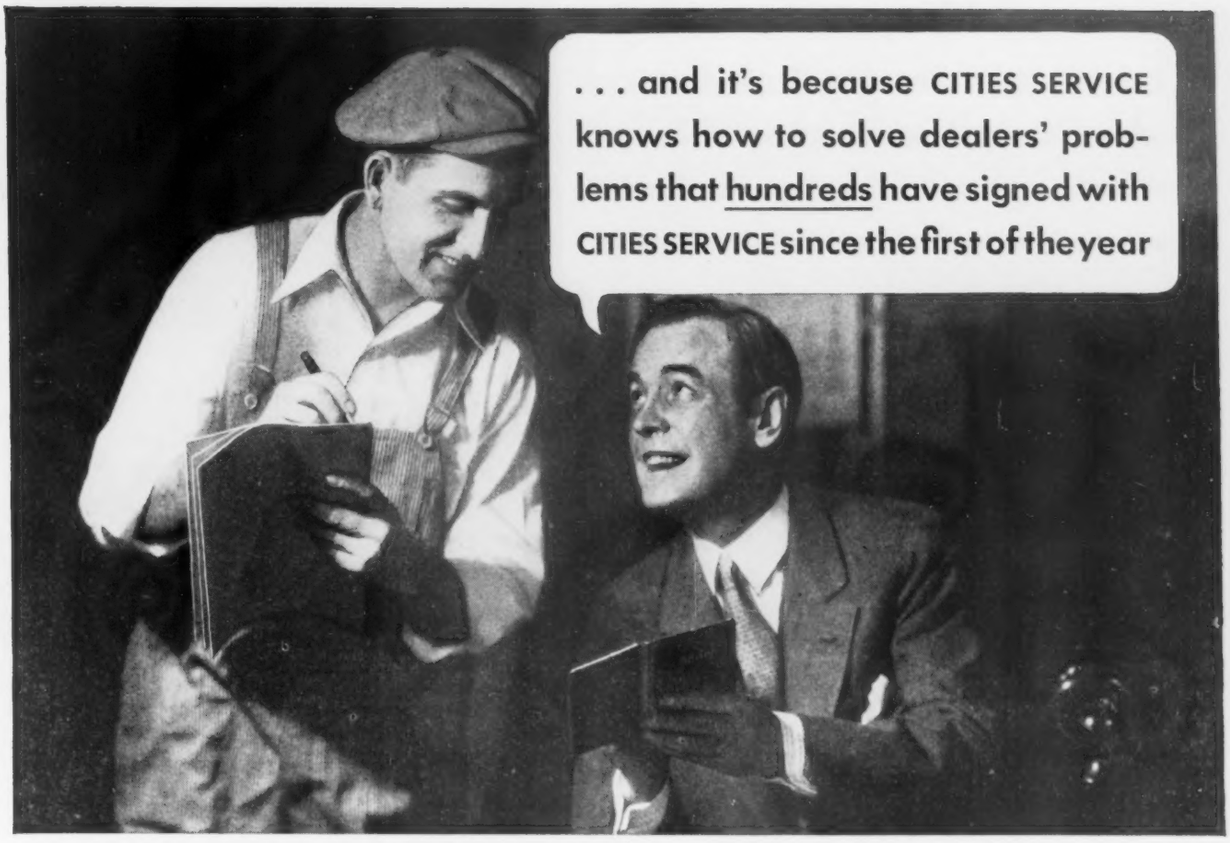
In a pre-show announcement, Alvan Macauley, president of the Automobile Manufacturers Assn. and the Packard Motor Car Co., made the following statement:

"During the last 12 months the industry has produced 5,102,000 vehicles—an output approaching its 1929 record of 5,621,715 units. It is difficult to say whether an annual production of 5,000,000 units is all that the industry can look forward to for the future. Until economic conditions in other countries permit a greatly increased export demand, perhaps we should not expect anything greater. If normal expansion of operations were obstructed, it might, conceivably impede the price trend of cars which generally speaking, has been downward from the very start."

Trucks Carry More

WASHINGTON, Nov. 1. — Petroleum products tonnage carried by trucks in September amounted to 8.57 per cent more than tonnage in September 1936, according to the American Trucking Assn.'s monthly report on truck loadings.

At the same time truck loadings of all commodities increased over September, 1936, by 4.47 per cent, the figures show.


. . . and it's because CITIES SERVICE knows how to solve dealers' problems that hundreds have signed with CITIES SERVICE since the first of the year

CITIES SERVICE OFFERS YOU THE INDUSTRY'S MOST UNIQUE SALES PLAN . . . A PROVED PROFIT BUILDER

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CITIES SERVICE OILS AND GASOLENES

The motor vessel Inland Chief, dual purpose water carrier recently put in operation on the Columbia River by Inland Navigation Co. Capacity for 300,000 gallons of petroleum products is provided by 12 separate compartments in the hold of the ship and the 110 by 30-foot deck house will hold 810 tons of bulk wheat or its equivalent in other farm produce. When Bonneville Dam is completed, this boat will operate in conjunction with dual purpose barges to move petroleum up the Columbia from Portland, Ore., for distribution to inland consuming areas, where farm products will be picked up for the return trip

Columbia River Moving Oil Into "Inland Empire"

By JACK WESTSMITH
N. P. N. Staff Writer

UP in the Pacific Northwest where men are men, trees grow tall and there is plenty of water, is a development which may go a long way toward changing the distribution of petroleum products in that area. It concerns the use of the Columbia river as a cheaper method of delivering these products from bulk terminals at, or near Portland, Ore., to farming territory of the Inland Empire.

Pacific Coast petroleum marketers are watching with considerable interest this development of the Columbia river as an important transportation link between the coast and points in eastern Washington and Oregon and in western Idaho.

Bulk movement of gasoline up this waterway is not entirely new. In spite of obstacles, there has been some success in this direction since late in 1936. But pioneers in the activity predict much greater development when Bonneville Dam and Locks are completed and opened to traffic in December of this year.

Columbia River transportation, as it has been carried on in recent months, necessitates double handling, in that a boat loaded at Portland must now transship its products over, or through, Bonneville Dam to barges on the other, or up-stream side. Through shipment will be possible by the completion of the single lift locks.

The Bonneville Dam, 50 miles above Portland bulk petroleum terminals, which are supplied by boat movement from California refineries, will provide 45 miles of slack water up to The Dalles, Ore., and smooth over much of the rough water of Cascade Rapids.

Above The Dalles, river improvement now under way is scheduled to be finished in the latter part of 1938. Drilling and blasting crews, followed by dredges, are clearing a deep-water channel for navigation as far inland as Umatilla, Ore., approximately 200 miles up-stream from Portland.

Development of transportation on the Columbia within the past nine months represents the first application of the Dennison inland waterways stabilization act, as amended through the effort of Idaho's Senator Borah in 1934, to include the Columbia and Snake rivers.

It is the answer to a demand by strongly organized inland counties for use of the Columbia, and eventually the Snake

OTHER ARTICLES ON NORTHWEST

The accompanying is the fourth article written by NATIONAL PETROLEUM NEWS Staff Writer Jack Westsmith, based on a 4700-mile motoring trip in which eight states in the northwest section of this country were crossed. Other articles previously published are:

"Two Bald-Headed Tires," Sept. 6, page 39.

"The Five-Gallon Buyer Visits the Far Northwest," Oct. 13, page 34.

"Wider Automotive Servicing," Oct. 20, page 34.

to provide cheaper transportation, not only for petroleum but for grain and other farm products.

Present indications are that oil companies marketing in this northwest area will not operate their own equipment in this river development, but will rely upon transportation and storage facilities offered by service companies now in the field.

Leader among these service companies is the Inland Navigation Co., which in conjunction with its affiliate River Terminals Co., has constructed bulk storage for petroleum products at The Dalles and has a new-type motor vessel and a fleet of barges for effecting through delivery from Portland when Bonneville Locks are in operation.

Normal operation will call for the diesel-powered river boat to push a string of four or five barges loaded with petroleum product direct from Portland to the river terminal. At present some deliveries are being made by pumping over the Dam.

ALTHOUGH water transportation is not yet under compulsory interstate regulation, the company volunteered to come under this jurisdiction to remove possible barriers to its operating service and to force rail and truck lines into a co-operating agreement. In 1935 it applied to the Interstate Commerce Commission for a certificate of necessity and convenience on its proposed service.

The certificate was granted in September, 1936, with provisions requiring rail lines—which had strongly protested the development — to co-operate with the navigation company in making through rates on a joint boat and rail movement; this rate to give the boat line a preferential under the rail rate for the water portion of the haul.

When trucks came under jurisdiction of the Interstate Commerce Commission, a combination boat-truck tariff was set up which would give the inland marketer the right to use either boat-rail or boat-truck combinations on shipments from Portland.

Under a formula laid down by the ICC, the rails or trucks are required to take products shipped by water, two miles inland at the preferential rate for every mile the products are taken along the river. This means that for the 100-mile river haul from Portland to The Dalles, the combination rates will apply to inland points within a radius of 200 miles of the river terminal.

This is expected to facilitate movement of products from Portland to the important consuming area around Bend, Ore., where buyers will receive a differential of two cents per 100 pounds under the all-rail or all-truck rates.

River Terminals has a 20-acre tank farm at The Dalles with 11 tanks having a total capacity of 1,300,000 gallons. Each tank has a 5-inch, individual pipe line from the dock and a similar line to the truck loading rack. The same arrangement will be continued to serve a tank-car loading rack when it is completed in November.

The service company will also operate another bulk storage depot to be constructed at Umatilla, when the river channel is deepened to that point. The plant at this location will have storage for 2,500,000 gallons and will aid in transfer of petroleum products to rail and truck for distribution into Spokane, Wash., Boise, Idaho, and adjacent areas.

"Jack" Hyneman, in charge of operations for the navigation and terminal companies, believes a differential of 20 per cent under all-rail and all-truck rates will be possible in favor of the boat haul via Umatilla.

However, the crux of this company's transportation development is the proposal to provide farmers of the Inland Empire with a cheaper method of moving their products to the coast. Heretofore, it was not economically feasible to make a no-pay-load trip up the river to secure the down-river haul of farm products. Petroleum from California refiners, however, is expected to make this operation possible.

Ultimate realization of the plan will call for farmers to build bulk storage facilities for farm products at the petroleum river terminals. This would eliminate the costly practice of sacking grain for its short haul down the river to Portland or Astoria.

To meet the need for this combination type of service, Inland Navigation recently put into operation the motor vessel Inland Chief, which is declared to be the first tank ship approved under new tanker regulations to haul wheat, or other farm produce and also petroleum.

Electrically welded throughout, this vessel is powered by two 700-horse diesel engines of two-cycle submarine design. The ship is propelled by two 60-inch paddle wheels located in tunnels at the stern so they do not project below the bottom of the boat — a guard against damage in shallow water.

The ship has a capacity for 300,000 gallons of petroleum products — 250,000 gallons of gasoline and 50,000 gallons of diesel oil — in 12 separate compartments in the hold of the ship. Loading and unloading is done by 5-inch centrifugal pumps connected through 5-inch lines to the bottom of the tank compartments. The boat can discharge at a rate of 1900 gallons per minute.

Pumps and valves to the tanks are operated from a central room on the top deck by means of extension rods extending down through a well in the ship. This room also has air pressure gauges, which are calibrated to 1/10th of a gallon at the top and bottom, for facilitating the loading and unloading operation.

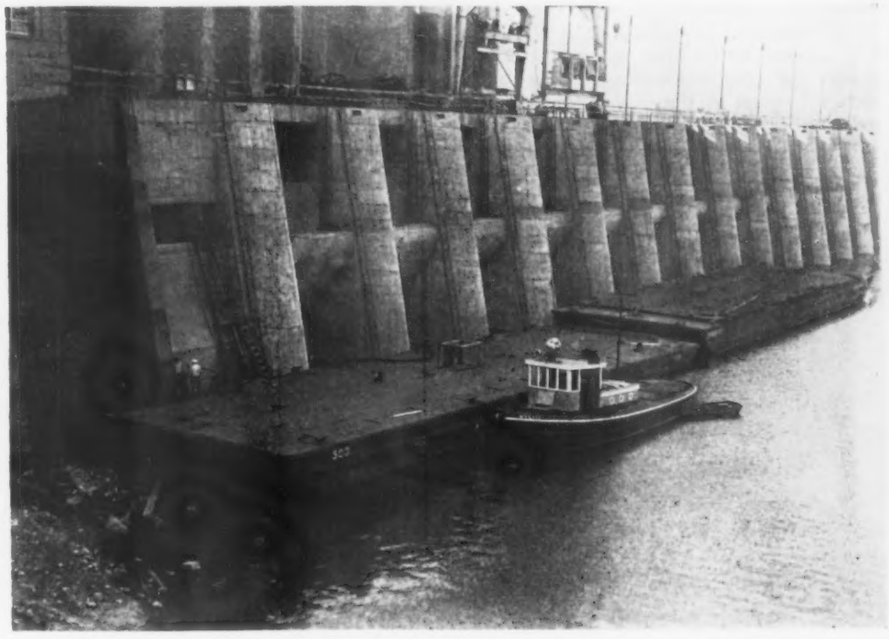
SAFETY measures are prominent on this boat. An automatic carbon dioxide system is provided for fire protection and vents from each tank discharge into the air from the top of a loading-derrick head 35 feet above the lower deck. Possible fumes in the valve and pump well are sucked out by an auxiliary pump and discharged from the same point.

Because it will operate in areas subjected to dust storms, the vessel is air conditioned and the engines are equipped with air cleaners. In fact the owners have done everything possible to build comfort, convenience and efficiency into this river boat.

A double bottom in the engine room carries a storage of 5000 gallons of diesel oil for engine fuel.

Dual purpose transportation features were obtained by building a 110 by 30-foot steel deck house, which will hold 810 tons of bulk wheat or proportionate amounts of other farm products. It is proposed to unload the bulk wheat by means of suction pumps at the down river wheat terminals and to load the grain through hatches direct from the farmer's river terminals.

Barges to be used in conjunction with



Barges on the up-river side of Bonneville Dam being loaded from the Inland Chief on the down-stream side. The petroleum products are actually pumped through a gateway in the dam, using 5-inch lines and pumps on the river boat. Each barge has a capacity of 150,000 gallons

This bulk storage on the Columbia River at The Dalles, Ore., 100 miles above Portland, is operated by River Terminals Co., affiliate of Inland Navigation Co., and has capacity for 1,300,000 gallons of petroleum products

the motor vessel will also be equipped to handle both petroleum and farm products. The boat and five barges will form a combination with a total capacity of 975,000 gallons of gasoline, or other petroleum products, for the up-river haul and 2500 tons of bulk wheat, or its equivalent, on the return trip.

In addition to this transportation service, one other company is moving gasoline up the Columbia. Tide Water Transportation Co., operated by Kirk Thompson, distributor for General Petroleum Corp. in the Spokane area, has been successful in barge transportation along the river as far as Attalia, Wash., 235 miles by highway from Portland and 165 miles southwest of Spokane.

This operation is purely on a contract basis, under which the private carrier delivers "Q" grade gasoline — the only product hauled to date — into tankage leased by General Petroleum on the river bank at Attalia. Although this project is admittedly experimental, it is thought to have considerable merit from an operating standpoint.

This is tug and barge operation, with the present necessary double handling feature at Bonneville making it difficult to gauge actual success under normal operation, on a through haul direct from Portland to Attalia.

It now takes the tug Mary Gail, which has recently been equipped with new, heavy duty diesel engines, about 32 hours to take the barge from Bonneville to Attalia. This includes a layover along the river banks at night.

The barge has a capacity of 100,000 gallons, but low water at the upper end of the haul, and strong river currents have put a limit of 75,000 gallons on the amount practical to carry with the quantity generally about 50,000 gallons.

Delivery into tankage at Attalia is achieved through a floating pump house at the water's edge, with the barge anchored in the stream. There are three tanks at the terminal, two with capacities of 47,300 gallons and one of 176,300 gallons.

These operations were started early last June and during July 238,000 gallons of gasoline were delivered by barge to the terminal. It was indicated at a hearing before the Interstate Commerce Commission in June for the purpose of fixing tank truck rates out of Attalia, that there would be a movement of approximately 17,000,000 gallons of gasoline through the Attalia storage annually.

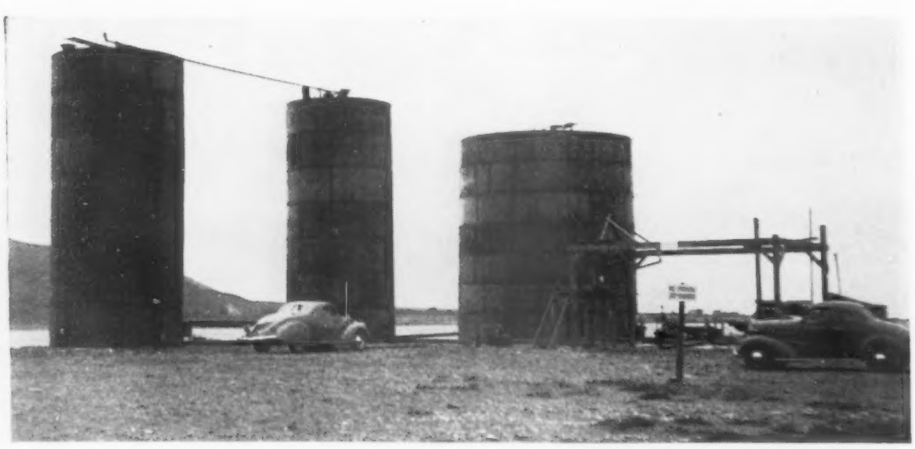
Testimony was also offered that General Petroleum had contracted to pay Tide Water Transportation one cent a gallon, or 15 cents per hundred weight, for moving bulk gasoline from Willbridge (bulk terminals below Portland) to Attalia.

Representatives of the trucking company, which had been engaged to make the distribution haul from Attalia, testified that the proposed rates would produce on an average of 2¼ cents more per truck mile than rates then in effect from the coast to points to be supplied from Attalia.

It was also declared that, if the rates were not approved, the oil company had indicated it would put on its own trucks to haul from this terminal point.

Telegrams were received from Pacific Supply Co-op, Washington State Farm Bureau, and Inland Empire's Waterways Assn. each claiming to represent several thousand farmers and other consumers and demanding that the trucker's application be approved.

Testimony was given by another large marketer's representative that his company would not object to the proposed rates on distribution north and east of Attalia; however, it felt that the rates



This 270,900-ga'lon bulk storage at Attalia, Wash., on the Columbia River 235 miles above Portland, Ore., has been leased by General Petroleum Corp., Deliveries are made to this terminal by tug and barge. Only the standard grade of gasoline is handled at present and it is delivered through a 3-inch meter to the loading rack for distribution by tank truck and trailers to Spokane and other eastern Washington points

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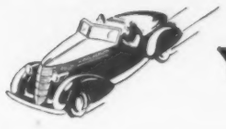

YOU *START*

from this point west to Pasco, Yakima and other western destinations were too low for the reason that normal flow of traffic into those areas should be east bound from the coast.

It was indicated that, if freight costs through Attalia were low enough to effect this east-bound traffic, the company would probably give consideration to construction of its own river terminal in the vicinity of Attalia and would arrange for water transportation.

Rail rates from the coast to eastern Washington were declared to be too high and it was suggested that the proper rail move to counteract this trend toward water transportation would be to cut the through rates from the coast. Attorneys for the rails said, if rates were established from Attalia, lower rates would likely be made on the through haul to meet this competition.

However, the contention was made that any rate established from Attalia should give recognition to the Dennison act and that through freight costs from Willbridge to final destinations under a barge-truck combination should have a fixed relationship to all-rail rates.

Truck rates from Attalia were approved and became effective July 15, to give considerable freight saving at several inland points for the barge-truck haul, over the all-rail or all-truck haul.

Within the so-called "parity area" around Spokane, rail rates from either Seattle or Portland are the same. That is, from either of these coast points to Spokane the through rail rate on gasoline is 45 cents per 100 pounds. The combination barge-truck rate from Willbridge to Spokane is 43 cents per hundred, or a saving of two cents per hundred.

To Pasco and Walla Walla, Washington, the barge-truck combination affords savings of 11.5 and 7.2 cents per hundred pounds, respectively. However, to Yakima, Ephrata, Almira, and Toppenish, in Washington, the barge-truck rate is in excess of the all-rail or all-truck rates from the coast.

If these efforts to develop navigation on the Columbia river prove a success under normal operation, following completion of Bonneville Dam, the Pacific Coast marketing companies are expected to take advantage of the cheaper transportation to meet the growing competition which is being offered by refiners in Montana and Wyoming for the eastern Washington and Oregon, and western Idaho markets.

Growing Use of Diesels Seen In Railroad Service

N. P. N. News Bureau

NEW YORK, Nov. 1.—Sufficient advances have been made in the development of the diesel engine to assure a rapid growth in the field of commercial automotive vehicles and in railway passenger and switching service, it was brought out by speakers at a luncheon given by Alfred P. Sloan, Jr., chairman, General Motors Corp., here Oct. 28. The luncheon commemorated the fortieth anniversary of the first successful oil-burning diesel engine.

Charles F. Kettering, General Motors vice president predicted that diesel engines eventually will "produce power for very much less than anybody today thinks it can be done." He admitted, however, that he did not know just what the future might bring in development. Frequently asked when the diesel will be put into automobiles, his answer was "when we get them good enough." Their cost will always be higher because fuel injectors are expensive, he said.

The reason why the more efficient diesel did not come earlier and is not in every type of vehicle today is that diesel efficiency goes up with compression pressure and higher pressure means greater weight, Mr. Kettering said. The pressure before ignition is around 650 pounds in a diesel and about 125 pounds in a normal gasoline engine.

One way of reducing weight is to fire the cylinder on every piston stroke instead of every other stroke, as in the gasoline engine. This was done by General Motors in the Winton engine. Another advance was the raising of fuel injection pressures from 4000 or 5000 pounds to as high as 25,000 to 30,000 pounds per square inch. The first of the Winton lightweight engines was exhibited at the Century of Progress in 1933 where it was studied by Ralph Budd, president, Burlington Lines.

Mr. Budd, another speaker at the luncheon, pointed out that the railroads have not been backward in adopting such an efficient machine as the diesel engine. The new use "in high-speed trains began almost the very minute that the engine was so modified as to be suitable for such service," he said. "That suitability came when the two-cycle principle and the strong new metal alloys, reduced the diesel's weight from upwards of 150 pounds per h. p. to 21 pounds."

Adoption of modern diesel locomotives, which average twice the service that can be expected of steam locomotives at much lower operating costs, should prepare us for almost anything in railroad transportation, he said. He predicted the coming use of diesels in mainline heavy freight service and referred to diesel locomotives as a "natural" in switching service.

The cost per train mile for locomotive maintenance, fuel and lubricating oil on the four smaller Zephyrs in Burlington service has averaged about 5 cents, as compared to 29 cents for steam trains of the same carrying capacity. First cost is higher but the dieselized unit can make as many service miles per year as two steam locomotives and the on-time performance has been 96% perfect, as compared with about 70% for all locomotives, Mr. Budd stated. Diesels have to take water and fuel once in four-days and can be kept in continuous operation, a sharp contrast to steam locomotive practice.

H. L. Hamilton, president of Electro-Motive Corp., a subsidiary of General Motors, told luncheon guests, "From quite complete studies, and our experience with diesel power, we are convinced that were the Class I railroads to put 3000 diesel locomotives in switching service, this number of diesels, or about 25 per cent of the present locomotive inventory, would cover approximately 50 per cent of the present switching hours, and effect a saving in operating expenses of $52,000,000 yearly."

"This saving would be sufficient to fully liquidate the investment in diesel locomotives within five years," he stated Mr. Hamilton traced the rapid rise in the use of diesel locomotives from 1934. The full economy of diesel operation will not become effective until diesel completely supplants steam in a given engine district, he said, thereby eliminating the supporting services of steam that are not needed for diesel, such as coal docks, water stations, track pans and water treating facilities.

Clinic On Merchandising Is Offered To Dealers

CLEVELAND, Nov. 1.—Addresses on how to service the new 1938 automobiles and better methods of merchandising at service stations are being presented to service station attendants of northern Ohio, who are invited by the Cleveland branch of the Socony-Vacuum Oil Co., Inc., to attend a fall sales clinic at the Carter Hotel here.

The company has invited all dealers, whether or not they are Socony-Vacuum retailers. The first clinic was held Oct. 27 and there will be sessions Nov. 3 and Nov. 10.

Col. E. M. Lubeck of Detroit, technical editor of the Automobile Daily News, at the first clinic, discussed the technical changes in the new models and proper merchandising of accessories and lubrication services to the car owner. The average automobile owner spends $159.20 on his car a year, according to figures by Lubeck. This amount, he said, is divided as follows:

Gasoline	$85.00
Oil	18.00
Tires	25.70
Lubrication	11.50
Accessories	11.50
Battery	7.50

If the service station is getting a full share of its potential business, Lubeck commented, it will sell, with every $85 in gasoline sales, the other services in the above respective amounts.

Forty thousand automotive dealers will sell four million cars in 1938, Col. Lubeck said. These cars represent potential additional business for service stations. He said that sales goals of the three leading manufacturers are as follows:

Ford	1,250,000 units
Chevrolet	1,200,000 units
Plymouth	600,000 units

Charles R. Miller of Detroit, Socony-Vacuum consulting engineer on fuels, will address the dealers Nov. 3 on the fuel needs of 1938 cars, the company announced.

Leading the clinic on Nov. 10 will be George A. Round of Cleveland, automotive lubrication engineer for Socony-Vacuum.

"AUTOMOTIVE MONEY SAVING FACTS" By J. F. WINCHESTER

A four hundred page comprehensive study of automotive fleet operation from a money-saving standpoint, relating to fleet management, personnel, selection of vehicles, their safe operation and maintenance.

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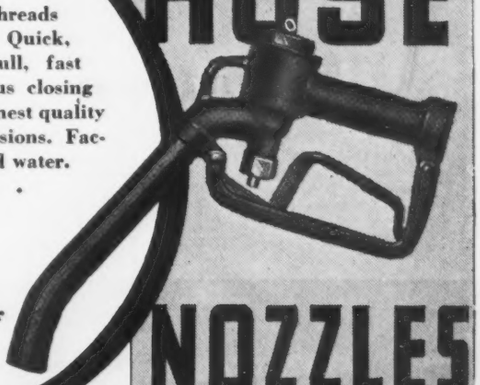

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Your facilities, plus ours, gives you a setup equal to any.

We expect an increased demand for fuel oils this winter, due to the large additional installation of burners and would suggest you communicate with us at your earliest convenience.

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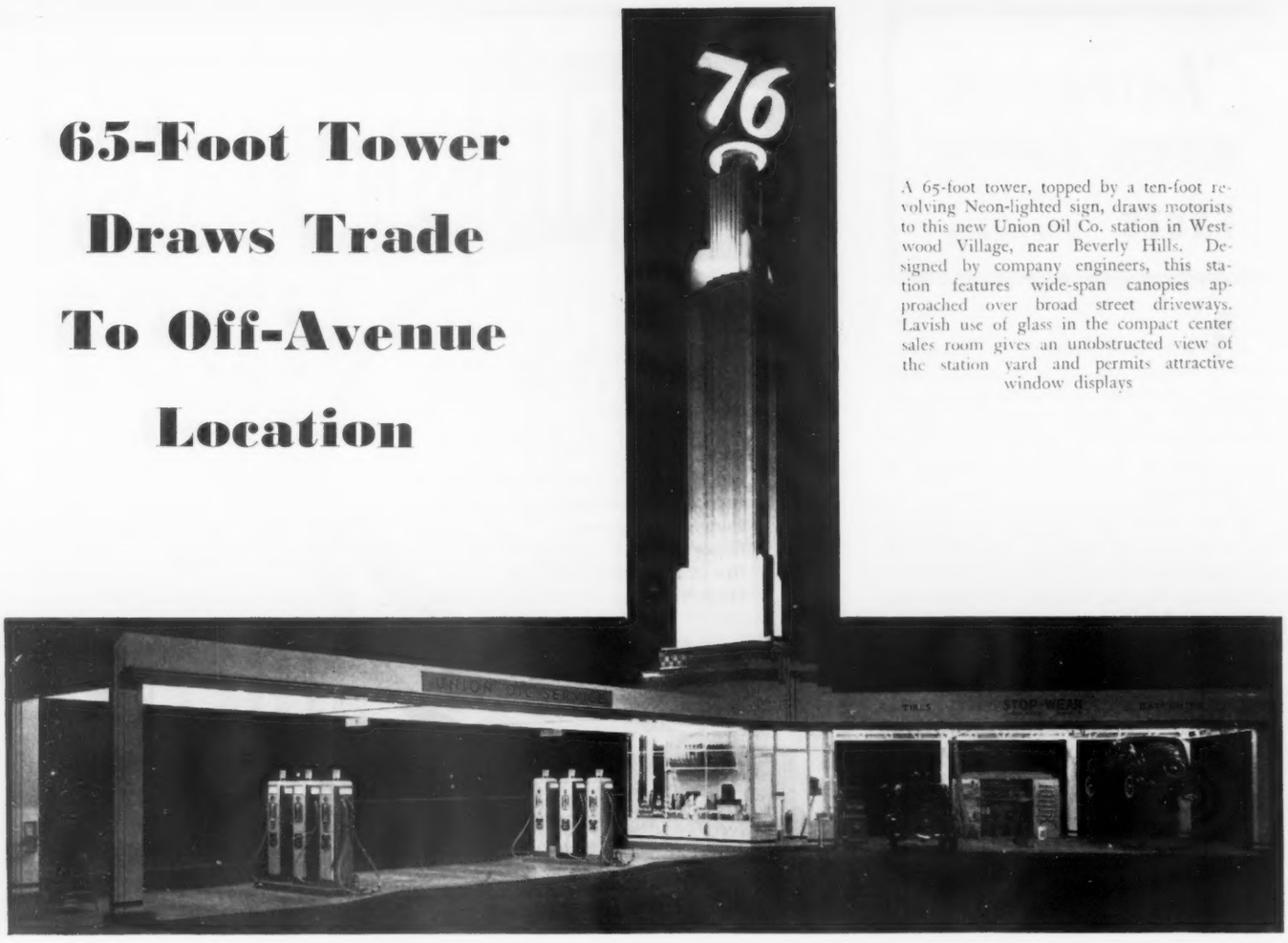
Ocean Terminals: Baltimore, Md.; Tiverton, R. I.; Dorchester, Mass.; Carteret, N. J.; Edgewater, N. J.; Glastonbury, Conn.; Philadelphia, Pa.

65-Foot Tower Draws Trade To Off-Avenue Location



A 65-foot tower, topped by a ten-foot revolving Neon-lighted sign, draws motorists to this new Union Oil Co. station in Westwood Village, near Beverly Hills. Designed by company engineers, this station features wide-span canopies approached over broad street driveways. Lavish use of glass in the compact center sales room gives an unobstructed view of the station yard and permits attractive window displays

ZONING restrictions along Wilshire Blvd. in the vicinity of Westwood Village, home of the University of California, at Los Angeles, preclude construction of service stations or other places of business.

However, these restrictions do not exist in the village itself, which is a block north of Wilshire, and this fact has had an interesting effect on the design of service stations built to serve the college town and also catering to the flow of traffic along Wilshire between Los Angeles and the beach towns.

This design has called for the construction of towers above the service station buildings, to serve as a beacon to boulevard motorists and to the college students housed on fraternity and sorority row behind the village. The towers particularly lend themselves to effective flood-lighting.

One of the latest in this design and construction is the Union Oil Co.'s new station on the corner of Gayley and Lindbrook Aves. in Westwood.

A 65-foot painted steel tower of modernistic design, surmounted by a ten-foot revolving Neon sign, rises effectively above the compact sales room, which is the focal point for two unusually long canopies. The tower, of all-welded construction, was fabricated on the ground and erected in a single piece — a feat requiring no mean engineering skill.

Tower lighting is achieved by recessed fixtures at three different elevations in the structure and all lights under the canopies are served from hidden conduits and so located as to carry out the indirect lighting effect. The station is finished in white with blue lettering.

Storage space at the base of the tower provides a place for extra stocks and supplies as an aid to neatness and appearance. The air compressor is also located here. The rest rooms are worthy of being written home about. The men's room is in the rear of the center sales room and a detached rest room for women has a powder room attractively finished with composition tile walls, chrome trim, porcelain enamel accessories, large circular mirror and a purse shelf.

Located on a piece of ground 128 feet wide and 110 feet deep, this station emphasizes ease of entrance and spaciousness, which the company has found invites patronage. Wide approaches along both street sides of the station facilitate the movement of traffic in and out of the yard. Except for cement slabs in the island driveways and service department, the yard is paved with a two-inch mat of Topeka mix asphalt laid over a two-inch sub-grade of decomposed granite.

Accessibility is also emphasized by a 51-foot clear span canopy over the two pump islands, which are equipped with the latest type computing pumps and retractable air and water hoses housed in wells at either end of the islands.

Lubrication equipment, two car lifts and provisions for a future wash rack are located under a 36-foot clear span canopy which projects from the central sales room at an oblique angle to the pump canopy, in order to take advantage of a curve in one street and to give additional room in the asphaltic concrete yard.

A feature of the lubrication department is an attractive cabinet which houses greases, oils and other products and equipment used in this service. Insides of the doors on this cabinet are equipped with brackets for grease guns and the various assortment of small tools found underfoot in many service stations, their arrangement here aiding the appearance of neatness and order.

THE company points to an interesting marketing sidelight in connection with the operation of this new outlet. It was constructed on a corner only a block away from another modern Union Oil Co. station on the main Westwood Village thoroughfare, in anticipation of a change in traffic movement due to congestion on the main artery.

It was expected the older station would suffer a loss of business when the new unit was opened but, although the new station, operated 24 hours a day with a five-man crew, is already selling 500 gallons of gasoline a day, the older outlet continues to hold up to its former volume of 1200 gallons daily.

Oil Company Radio Program Seeks "Missing Heirs"

TULSA, Okla.

Are you one of America's missing heirs? Should you rightfully inherit an estate worth $10,000 — or $25,000 — or maybe $50,000?

As a part of its new advertising program, the Skelly Oil Co. has launched a weekly radio program known as the Skelly Court of Missing Heirs.

The program, which is being broadcast over a chain of 24 stations for 36 weeks, is based on the belief that there are people who are the heirs to unclaimed estates totaling millions of dollars in cash and property.

Each week the broadcast will dramatize the facts about two people who have died and left unclaimed estates. The company will also publish each week a bulletin to be distributed through Skelly stations, which will include the week's two radio dramatizations and also six others which will not find their way to the air waves.

The entire Skelly program, outlined in a message from W. G. Skelly, president, in the Sept. 1 issue of NATIONAL PETROLEUM NEWS, pointed out the "advertising will have but one main objective—to bring people into Skelly service stations".

In an elaborate, loose-leaf bound sales brochure, the first inside page is devoted to a reproduction of this sales message that appeared Sept. 1, together with a reproduction of the NATIONAL PETROLEUM NEWS cover.

The radio program is only one of the factors in Skelly's new advertising plan. In laying the ground work for the campaign, the company and its advertising agency contacted 44 jobbers who told them of their problems, gave suggestions, and offered comments. Also among those interviewed in the field were 280 Skelly dealers and 32 competing dealers, all of whom added to the fund of information on which the campaign was founded.

A survey was also made among the car owners. These customers, 1004 of them, told the company representatives what they wanted in gasoline and oil and service. According to the results, about 50 per cent buy to get quick starting and mileage in a gasoline, and motor protection in oil. The other 50 per cent buy because of convenient station location.

The company's story of blended gasoline to meet seasonal and geographic conditions will be generously told in newspaper and farm paper advertising throughout the Skelly territory in the middle west. Other advertising and sales assistance to the dealers includes station and parking posters, banners, weather signal flags, and window display suggestions.

'Auto Port' Selling Plan to Aid Jobbers

MILWAUKEE, Nov. 1.—The Wisconsin Petroleum Assn. and the committee appointed by it to further the "Auto Port" plan of gasoline marketing, is nearing its objective of state-wide distribution, according to R. L. Brecke, association secretary.

Advertising to be placed in newspapers throughout Wisconsin is being held up until state-wide distribution has been accomplished. Complete coverage of the state is necessary, Brecke said, to enable the coupon interchange to function properly.

The "Auto Port" plan of marketing grew out of movement for group buying started at the association's annual convention here in March. At that time the committee headed by A. C. Breuch, Pennsylvania Oil Co., Madison, was appointed to study the plan.

In July the committee made its recommendation. The group buying plan had been abandoned, and in its place was a marketing proposal for common identification of outlets and an interchange of coupons.

At a meeting in July, the name "Auto Port" was adopted, as well as an insignia of circular design in red, white and blue colors. At this meeting independent refiners presented their sales programs explaining how they would fit into the proposed "Auto Port" plan. Later the committee held regional meetings throughout the state.

The "Auto Port" program provides for member jobbers to buy from independent refiners, each jobber making his own purchasing arrangements. Member stations will be identified by the "Auto Port" insignia. Under the set-up jobbers selling under "Hello Neighbor," "Dixie," and "Sovereign Service" trade names can continue these insignias, and also use the "Auto Port" emblem.

BLOOMINGTON, Ill., Nov. 1.—A $165,000 one-stop service station and parking garage is being built in downtown Bloomington. It is to be completed by early winter.

Auto Hotel, Inc., is building and will operate the station and J. C. Sampson, Sampson Oil Co., is the principal stockholder.

The new station will have a basement and four stories. Exterior walls will be of 8-inch glass brick, the building weight being carried on concrete pillars.

One-stop service facilities will be on the ground floor. The gasoline pump island will be 60 by 60 feet. Rest rooms will be in a wing, 21 by 28 feet, and interior walls will be of marble.

Remainder of the ground floor, 88 by 148 feet, will be for lubrication service, car washing and accessory sales.

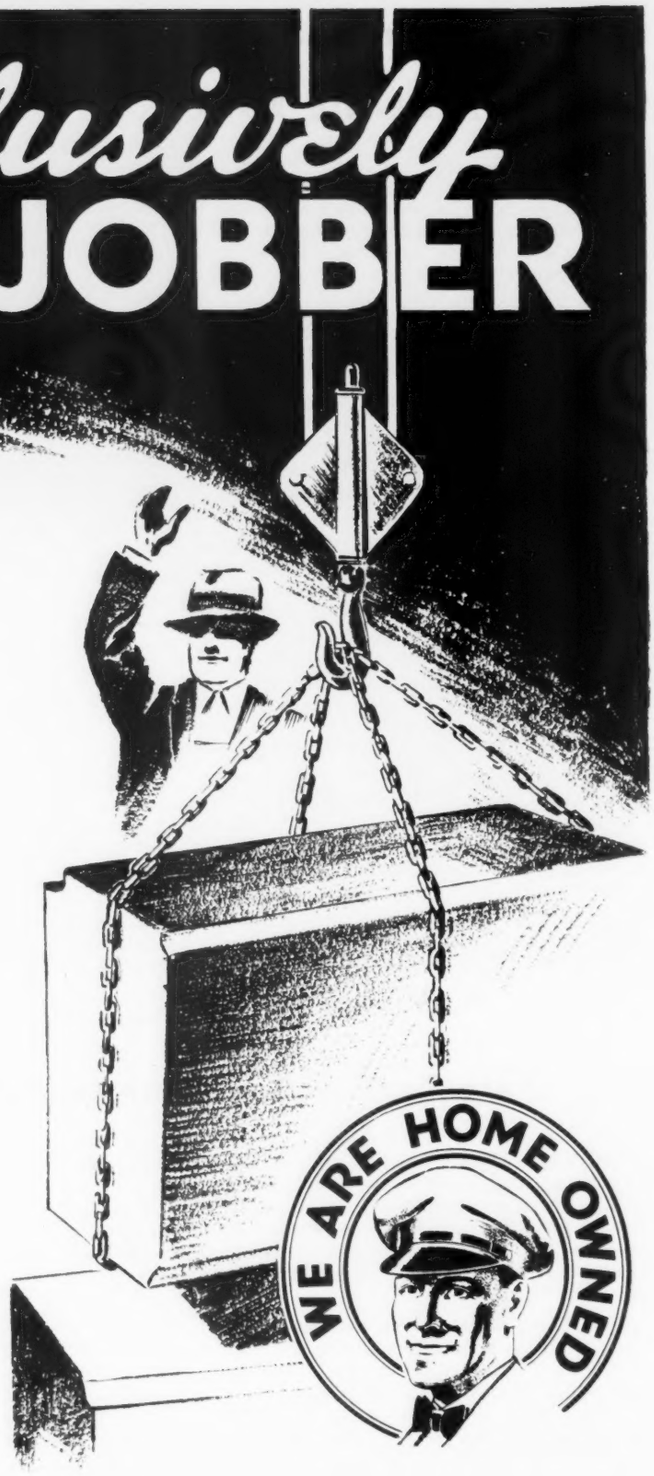
The Accepted Standards of Pennsylvania Bright Stock Excellence Since 1900

H-M and L-M Oils Are Made Solely By

THE CONEWANGO REFINING CO.

Warren, Pa.

Built Exclusively for THE JOBBER



GLOBE home owned Independent Jobbers are satisfied because they are successful. The Globe profit building program for the Jobber gets results. It builds up the Jobber's prestige and popularity in his own community, thus assuring gallonage and increased profits. Look into this different Globe Plan. It will work for you as it is doing for hundreds of prosperous Globe Independents. Investigate today.

THE GLOBE OIL & REFINING CO.

PRODUCERS AND REFINERS

SALES OFFICES

UNION NATIONAL BANK BLDG., WICHITA, KANS.
59 EAST VAN BUREN STREET, CHICAGO, ILL.
2424 UNIVERSITY, S. E., MINNEAPOLIS, MINN.

REFINERIES

McPHERSON, KANSAS
BLACKWELL, OKLAHOMA
LEMONT, ILLINOIS

KEEP ROLLIN' WITH GLOBE

Globe GASOLINE

Markets

At A Glance . . .

Pennsylvania: Fuel oil supplies short of demand.

Mid-Continent: Gasoline prices lower.

Mid-Western: U. S. motor prices off 0.125 cent.

Eastern Seaboard: 65 octane gasoline lower at 3 terminals.

Coastal: Two export cargoes of 64-66° gasoline sold.

California: Quotations on fuel for Japan near $1 per barrel.

Wax: Crude scale market inactive; fully refined, steady.

Eastern

Gasoline Dull

N. P. N. News Bureau

NEW YORK, Nov. 1.—Tank car gasoline markets along the eastern seaboard were listless during the last week in October, traders reported. Lower quotations were reported in tank car spot markets at Norfolk, Wilmington and Charleston, but elsewhere price levels generally were unchanged.

Gasoline of 65 octane and above rating was reported sold by a few suppliers in the open spot market at Norfolk, Wilmington and Charleston at 7.50 cents f.o.b. terminals. Others continued to post 7.75 cents. Above 65 octane gasoline has been available at 7.50 cents at seaboard terminals both north and south of the above three points. Lower prices at the three points were made to strengthen their competitive position against the other terminals, it was said.

Tank car gasoline prices were lowered fractionally at New York harbor terminals by a number of suppliers. They had been asking 6.30 cents tank car and reduced to 6.25 cents. Several reasons were given for the reduction, which brought tank car quotations to 0.125 cent above barge competition, the margin prevailing generally on light fuel oils.

Kerosine demand was reported fair. Traders reported difficulty in obtaining 6.125 cents for barge lots at New York harbor.

California

Japan Seeks Special Fuel

N. P. N. News Bureau

LOS ANGELES, Oct. 30.—Pacific foreign inquiry for California petroleum and products remained a feature in local offshore markets. Although Japanese buyers refused quotations of $1.05 to $1.12 on upward of 100,000 tons of special fuel oil containing 25 to 30 per cent gas oil and having a minimum viscosity of 16 for navy needs, there was new inquiry from this source for a regular Grade C fuel oil.

Quotations on a cargo, approximately 70,000 barrels, were reported as $0.90 a barrel f.o.b. Los Angeles, by some suppliers.

Local refiners looked askance at the report negotiations had been completed between buyers for the Chinese government and Gulf suppliers for 110,000 drums of 71 to 74 octane aviation motor fuel, which would be shipped past the Pacific doorstep beginning in November. The price was said to range from 8.50 to 10 cents, exclusive of drums but including drum filling.

No change was reported in quotations on gasoline for export, except for a slight narrowing of range. Several traders thought a U. S. motor product, less than 65 octane, could be bought at 5.875 or perhaps 5.75 cents on a firm offer, although no sales have been made at these figures.

In domestic markets, especially that of burning oils, suppliers were building up stocks in anticipation of good demand.

Although some stove distillate and diesel oils for burning purposes were available at independent plants for 3.75 to 4.00 cents and 3.50 to 3.75 cents, respectively, sales at these figures were infrequent and for small lots. An occasional spot lot of high sulfur fuel oil made from Wilmington crude was available at 0.65 cent a barrel in a few instances, but most independent plants valued the product at not less than $0.70 a barrel.

N. P. N. Refinery Index

The Refinery Index shown below is the calculated average return from refining a barrel of 36 gravity Mid-Continent crude into its various principal products at the current price of crude oil. The index indicates the following margins in cents per barrel between cost of crude and current selling price of products.

Date	Margin
Nov. 1	54.8
Month ago	55.3
Year ago	50.1

N. P. N. Gasoline Index

	Dealer T.W. Cents per	Tank Car Gallon
Nov. 1	10.59	6.47
Month ago	10.67	6.72
Year ago	10.03	6.24

Dealer index is an average of "undivided" dealer prices, ex-tax, in 50 cities.

Tank car index is a weighted average of 13 wholesale markets for regular-grade gasoline.

Mid-Continent

All Gasoline Grades Lower

N. P. N. News Bureau

TULSA, Nov. 1.—Mid-Continent gasoline prices declined 0.125 to 0.25 cent a gallon the last week in October as demand remained spotty.

The larger decline was experienced by the higher octane grades. The low octane gasolines already had dropped to what many refiners said was "cost of manufacture" levels, and this decline eventually had its effect on the better motor fuel grades.

In addition to the general decline, Mid-Continent refiners leveled off their differential territory shipment quotations after several days in which there was a noticeable absence of uniformity.

Sellers generally reported that buyers were not interested in gasoline, except on a hand-to-mouth basis. Lower quotations apparently had attracted little, if any, new business; on the other hand many refiners said lack of actual need, rather than price was the major consideration of buyers.

Natural gasoline continued to be freely offered throughout the week, particularly in Texas. Prices remained generally unchanged. Several manufacturers reported late last week that they had begun to receive a fairly good volume of orders for Grade 26-70 for shipment over November. More refiners were quoting the high of the price range for kerosine last week and material still was scarce.

Mid-Continent refiners making bright stocks made no change in quotations although a few said they had begun to encounter more pressure from some of the areas where they compete with Pennsylvalia on a fairly even basis.

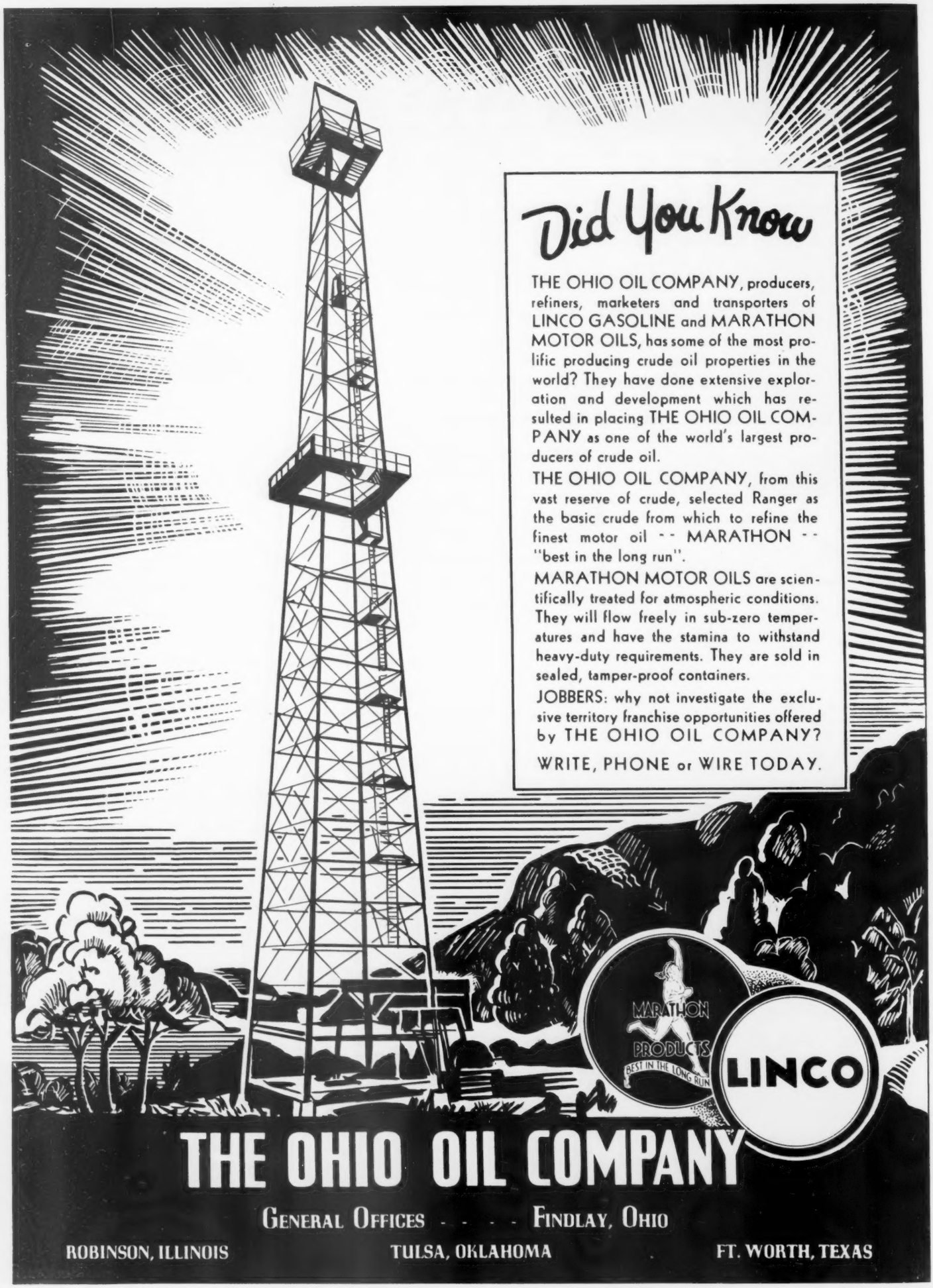
Mid-Western

U. S. Motor Prices Down

N. P. N. News Bureau

CHICAGO, Nov. 2.—The Mid-Western market the last week of October continued on the downward trend noticeable throughout the month.

Prices for all grades of U. S. motor were reduced 0.125 cent by virtually all suppliers. While the majority expressed the opinion that the market would level off at around prevailing prices, offerings


Did You Know
THE OHIO OIL COMPANY, producers, refiners, marketers and transporters of LINCO GASOLINE and MARATHON MOTOR OILS, has some of the most prolific producing crude oil properties in the world? They have done extensive exploration and development which has resulted in placing THE OHIO OIL COMPANY as one of the world's largest producers of crude oil.
THE OHIO OIL COMPANY, from this vast reserve of crude, selected Ranger as the basic crude from which to refine the finest motor oil -- MARATHON -- "best in the long run".
MARATHON MOTOR OILS are scientifically treated for atmospheric conditions. They will flow freely in sub-zero temperatures and have the stamina to withstand heavy-duty requirements. They are sold in sealed, tamper-proof containers.
JOBBERS: why not investigate the exclusive territory franchise opportunities offered by THE OHIO OIL COMPANY?
WRITE, PHONE or WIRE TODAY.
MARATHON
PRODUCTS
BEST IN THE LONG RUN
LINCO
THE OHIO OIL COMPANY
GENERAL OFFICES - - - - FINDLAY, OHIO
ROBINSON, ILLINOIS
TULSA, OKLAHOMA
FT. WORTH, TEXAS

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). Prices in cents per gallon, except heavy fuel oils in dollars per barrel, tank car lots, f.o.b. refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included, unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

Gasoline *and* Naphtha

Prices Effective	Nov. 1	Oct. 25
OKLAHOMA		
U. S. Motor: (a) (Octane Test L-3)		
62 oct. & below	4.375– 4.625	4.50 – 4.875
63-66 oct.	4.875– 5.125	5.00 – 5.375
67-69 oct.	5.125– 5.375	5.375– 5.625
70-72 oct.	5.50 – 5.875	5.75 – 6.00
60-62, 400 e.p.	*4.50 – 4.75	*4.625– 4.875
64-66, 375 e.p.	*5.00 – 5.25	*5.125– 5.25
68-70, 350-360 e.p.	*5.125– 5.375	*5.125– 5.375
WESTERN PENNA.		
Bradford-Warren:		
52-54 naphtha	*5.875– 6.00	*5.875– 6.00
Motor gasoline:		
U.S. Motor (58-62°)	6.00 – 6.25	6.00 – 6.25
Min. 60 oct.	*7.50 – 7.75	*7.50 – 7.75
Min. 65 oct.	*7.75 – 8.00	*7.75 – 8.00
64-66, 390 e.p.	6.125– 6.25	6.125– 6.25
68-70, 350-360 e.p.	6.25 – 6.375	6.25 – 6.375
Other districts:		
52-54 naphtha	*5.375– 5.50	*5.50 – 5.625
54-56 naphtha	5.375– 5.50	5.625– 5.75
Motor gasoline:		
U.S. Motor (58-62°)	5.375– 5.625	5.50 – 5.625
Min. 60 oct.	7.25 – 7.625	7.375– 7.75
Min. 65 oct.	7.25 – 7.875	7.50 – 8.00
64-66, 390 e.p.	5.75 – 5.875	5.75 – 5.875
68-70, 350-360 e.p.	6.00 – 6.125	6.00 – 6.125
CENTRAL MICHIGAN (Prices f.o.b. Cent. Mich. refinery group basis. Shipments, however, may originate at plants outside Central group).		
Str.-Run Gasoline	5.00 – 5.50	5.00 – 5.50
64-66 octane gas.	7.75 – 8.00	7.75 – 8.00
68-70 octane gas.	8.25 – 8.50	8.25 – 8.50
CALIFORNIA (3c tax to be added to prices if used in state)		
U. S. Motor:		
54-58, for instate shipment	7.50 – 9.25	7.50 – 9.25
54-58, for outside state shipment	8.25 – 9.00	8.25 – 9.00
58-61, 375-400 e.p., 65 oct. & above	8.50 – 9.75	8.50 – 9.75
†N. TEX. (For shipment to Texas and N. Mex. destinations; Group 3 prices quoted on northern shipments).		
U. S. Motor: (a) (Octane Test L-3)		
62 oct. & below	4.625– 4.875	4.75 – 5.00
63-66 oct.	5.125– 5.375	5.375– 5.50
67-69 oct.	5.50 – 5.75	5.625– 5.75
70-72 oct.	5.75 – 6.00	5.875– 6.00
60-62, 400 e.p.	*4.625– 4.875	*5.00 – 5.125
KANSAS (For Kansas destinations only)		
U. S. Motor: (a) (Octane Test L-3)		
62 oct. & below	4.675– 4.875	5.00
63-66 oct.	5.125– 5.375	5.25 – 5.50
67-69 oct.	5.375– 5.625	5.625– 5.75
70-72 oct.	5.75 – 5.875	6.00 – 6.125
†W. TEX.		
U. S. Motor: (a) (Octane Test L-3)		
62 oct. & below	4.625– 4.875	4.75 – 5.00
63-66 oct.	5.125– 5.375	5.375
67-69 oct.	5.50 – 5.625	5.625
70-72 oct.	5.75 – 6.00	6.00
†E. TEX.		
60-62, 400 e.p.	*4.625– 4.875	*4.75 – 4.875
N. LA. (For shipment within La. & into Ark.)		
U. S. Motor: (a) (Octane Test L-3)		
62 oct. & below	4.875– 5.125	5.00 –5.125
63-66 oct.	5.125– 5.25	5.25 –5.50
67-69 oct.	5.50 – 5.625	5.625–5.75
70-72 oct.	5.75 – 5.875	5.875–6.125
ARKANSAS (For shipment within Ark. & into La.)		
U. S. Motor: (a) (Octane Test L-3)		
62 octane & below	‡4.875	‡5.00
67-69 oct.	‡5.625	‡5.875
OHIO (Quotations of S. O. Ohio. Delivered anywhere in Ohio).		
U. S. Motor	8.375	*8.50
Above 65 oct.	8.625	*8.75

*Correction: This price correct for Oct. 25.

Natural Gasoline

(Prices are those to blenders on freight basis shown below. Shipments, however, may originate in other Mid-Continent manufacturing districts, such as Panhandle Texas, S. W. Texas or Kans.)

Prices Effective	Nov. 1	Oct. 25
F.O.B. GROUP 3		
Grade 26-70	4.25	4.25

*Nominal.

‡Only one refiner quoting.

†Refiners report they generally receive from 0.25c to 0.5c per gal. more for gasoline & kerosine for local or differential territory shipment.

(a) In line with National Petroleum News' policy of reflecting general trade practice, the above revisions in octane brackets, determined according to L-3 method, for U. S. Motor gasoline, have been made in the Okla. and Kans. markets, effective Sept. 20, 1937; in North and West Texas, Arkansas, and North Louisiana, Oct. 4. Formerly, octane numbers were: 62 & below, 63-67, and 68-70.

Prices Effective	Nov. 1	Oct. 25
Natural Gasoline (Cont'd)		
F.O.B. BRECKENRIDGE		
Grade 26-70	4.125	4.125– 4.25
CALIFORNIA (F.o.b. plants in Los Angeles basin)		
75-85, 350-375 e.p. for blending	7.25 – 7.75	7.50 – 7.75

Kerosine

Prices Effective	Nov. 1	Oct. 25
WESTERN PENNA.		
Bradford-Warren:		
45 w.w.	5.375– 5.50	5.375– 5.50
46 w.w.	5.50 – 5.625	5.50 – 5.625
47 w.w.	5.625– 5.75	5.625– 5.75
Other districts:		
45 w.w.	5.375– 5.50	5.375– 5.50
46 w.w.	5.50 – 5.625	5.50 – 5.625
47 w.w.	5.625– 5.75	5.625– 5.75
CENTRAL MICHIGAN (Prices f.o.b. Cent. Mich. refinery group basis. Shipments, however, may originate at plants outside Central group)		
47-49 w.w.	5.05 – 5.30	5.05 – 5.30
OKLAHOMA		
41-43	4.00 – 4.25	4.00 – 4.25
42-44 w.w.	4.25 – 4.375	4.25 – 4.375
KANSAS (For Kansas destinations only).		
41-43 w.w.	4.375– 4.50	4.375– 4.50
42-44 w.w.	4.50 – 4.625	4.50 – 4.625
†N. TEX. (For shipment to Texas and New Mexico destinations; Group 3 prices quoted on northern shipments).		
41-43 w.w.	4.25 – 4.375	4.25 – 4.375
†E. TEX.		
41-43 w.w.	*4.00 – 4.125	*4.00 – 4.125
N. LA. (For shipment within La. and into Ark.).		
41-43 w.w.	4.50	4.50
ARK. (For shipment within Ark. and into La.).		
41-43 w.w.	‡4.50	‡4.50
CALIFORNIA		
40-43 w.w.	6.25 – 7.00	6.25 – 7.00

Gas *and* Fuel Oils

Prices Effective	Nov. 1	Oct. 25
WESTERN PENNA.		
Bradford-Warren:		
36-40	5.00 – 5.125	4.875– 5.00
Other districts: (Excluding Pittsburgh District Prices).		
36-40	4.75	4.625– 4.75
CENTRAL MICHIGAN (Prices f.o.b. Cent. Mich. refinery group basis. Shipments, however, may originate at plants outside Central group).		
P.W. Distillate	4.875– 5.25	4.75 – 5.00
No. 3 gas oil, str.	4.50 – 4.75	4.50 – 4.75
U.G.I. gas oil	4.375– 4.50	4.375– 4.50
Fuel Oils (Vis. at 100):		
500-700 Vis.	3.25 – 3.50	3.375– 3.625
300-500 Vis.	3.375– 3.75	3.50 – 4.00
100-300 Vis.	3.50 – 4.25	3.50 – 4.25
OKLAHOMA		
No. 1 white	4.00 – 4.125	4.00 – 4.125
No. 1 straw	3.75 – 4.00	3.75 – 4.00
No. 2 straw	3.625– 3.875	3.625– 3.875
No. 2 dark	3.50 – 3.625	3.50 – 3.625
U. G. I. gas oil	*3.375	*3.375
28-30 zero	*3.50 – 3.625	*3.50 – 3.625
28-30	‡$1.35	‡$1.35
24-26	‡$0.925	‡$0.925
18-22	*$0.825–$0.90	*$0.825–$0.90
14-16	*$0.80 –$0.85	*$0.80 –$0.85
KANSAS (For Kans. destinations only).		
No. 1 p.w. fuel oil	4.125– 4.25	4.125– 4.25
10-14 fuel oil	$0.725–$0.775	$0.725–$0.775
N. TEX. (For shipment to Texas and N. Mex.; Group 3 prices quoted on northern shipments).		
No. 1 white	*4.125	*4.125
U. G. I. gas oil	3.00 – 3.125	3.00 – 3.125
24-26	$0.85 –$0.875	$0.85 –$0.875
18-22	$0.80 –$0.825	$0.80 –$0.825
N. LA. (For shipment within La. and into Ark.).		
No. 2	3.50 – 3.625	3.50 – 3.625
20-24	$1.10 –$1.15	$1.10 –$1.15
16-20	$0.95 –$1.00	$0.95 –$1.00
10-14	$0.80 –$0.85	$0.80 –$0.85
ARK. (For shipment within Ark. and into La.).		
No. 2	‡3.75	‡3.75
28-30 gas oil, zero	‡3.50	‡3.50
CALIFORNIA		
San Joaquin Valley:		
Heavy fuel	$0.70 –$1.00	$0.65 –$1.00
Light fuel	$0.85 –$1.10	$0.85 –$1.10
Diesel fuel (per gal.)	4.00 – 5.00	4.00 – 5.00
Stove dist. (per gal.)	4.50 – 7.00	4.50 – 7.00
Los Angeles:		
Heavy fuel	$0.65 –$1.10	$0.65 –$1.10
Light fuel	$0.90 –$1.20	$0.90 –$1.20
Diesel fuel (per gal.)	3.50 – 5.00	3.50 – 5.00
Stove dist. (per gal.)	3.75 – 7.00	4.00 – 7.00

Prices Effective	Nov. 1	Oct. 25
Gas and Fuel Oils (Cont'd		
San Francisco:		
Heavy fuel	$1.15	$1.15
Light fuel	$1.25	$1.25
Diesel fuel (per gal.)	5.50	5.50
Stove dist. (per gal.)	7.50	7.50

Note: All above heavy fuels meet Pacific specification 400; light fuel, spec. 300; Diesel fuels, spec. 200; and stove distillate, spec. 100

Neutral Oils

WESTERN PENNA.

Viscous Neutrals (Viscosity at 70° F.)

Vis.	Color		
200 Vis. (180 at 100°) No. 3 col., 420-425 fl.:			
0 p.t.		25.00 –25.50	25.00 –25.50
10 p.t.		24.00 –24.50	24.00 –24.50
15 p.t.		23.50 –24.00	23.50 –24.00
25 p.t.		22.50 –23.00	22.50 –23.00
180 Vis. (165 at 100) No. 3 col., 410-415 fl.:			
25 p.t.		21.00 –21.50	21.00 –21.50
150 Vis. (143 at 100) No. 3 col., 400-405 fl.:			
0 p.t.		21.00 –21.50	21.00 –21.50
10 p.t.		20.00 –20.50	20.00 –20.50
15 p.t.		19.50 –20.00	19.50 –20.00
25 p.t.		18.50 –19.00	18.50 –19.00

SOUTH TEXAS

Vis.	Color		
Pale Oils: (*Vis. at 100° F.; p.t. 0*)			
100	No. 1½-2½	5.25 – 5.50	5.25 – 5.50
200	No. 2-3	7.25 – 7.50	7.25 – 7.50
300	No. 2-3	7.75 – 8.00	7.75 – 8.00
500	No. 2½-3½	8.75 – 9.00	8.75 – 9.00
750	No. 3-4	9.25 – 9.50	9.25 – 9.50
1200	No. 3-4	9.75 –10.00	9.75 –10.00
2000	No. 4	10.00 –10.25	10.00 –10.25
Red Oils:			
200	No. 5-6	7.25 – 7.50	7.25 – 7.50
300	No. 5-6	7.75 – 8.00	7.75 – 8.00
500	No. 5-6	8.75 – 9.00	8.75 – 9.00
750	No. 5-6	9.25 – 9.50	9.25 – 9.50
1200	No. 5-6	9.75 –10.00	9.75 –10.00
2000	No. 5-6	10.00 –10.25	10.00 –10.25

Note: South Texas red oil prices shown above cover oils with green cast; blue cast red oils are slightly lower in some cases.

MID-CONTINENT (Vis. at 100° F.; F.o.b. Tulsa basis).

(0 to 10 P.P.)

Vis.	Color		
Pale Oils:			
60-85	No. 2	5.50	5.50
86-110	No. 2	6.00	6.00
150	No. 3	9.00	9.00
180	No. 3	10.00	10.00
200	No. 3	10.50	10.50
250	No. 3	11.50	11.50
280	No. 3	12.50	12.50
300	No. 3	13.00	13.00
Red Oils:			
180	No. 5	9.00	9.00
200	No. 5	9.50	9.50
250	No. 5	10.50	10.50
280	No. 5	11.50	11.50
300	No. 5	11.75	11.75

Note: Viscous oils, 15-25 p.p., generally are quoted 0.5c under 0-10 p.p. oils. Non-viscous oils, 15-25 p.p., generally are quoted 0.25c under 0-10 p.p. oils. Viscous oils (150-300 vis.), No. 4 color, generally are quoted 0.5c above No. 5 color oils.

CHICAGO (Vis. at 100° F.)

Pale Oils **0 to 10 p.p.:

Vis.	Color		
60-85	No. 2	7.25	7.25
86-110	No. 2	7.75	7.75
150	No. 3	10.00	10.00
180	No. 3	11.00	11.00
200	No. 3	11.50	11.50
250	No. 3	12.50	12.50
Red Oils:			
180	No. 5	10.00	10.00
200	No. 5	10.50	10.50
250	No. 5	11.50	11.50
280	No. 5	12.50	12.50
300	No. 5	12.75	12.75

**Viscous oils, 15 to 30 p.p. are quoted 0.5c lower, 60-85 and 86-110 No. 2 non-viscous oils, 15 to 30 p.p., are quoted 0.25c lower. To obtain delivered prices in Chicago, add 0.25c per gal.

Cylinder Stocks

MID-CONTINENT (F.o.b. Tulsa basis).

Bright Stocks:		
190-200 Vis. at 210° D	20.00	20.00
150-160 Vis. at 210° D:		
0 to 10 p.p.	17.00	17.00
10 to 25 p.p.	16.00	16.00
25 to 40 p.p.	16.00	16.00
150-160 vis. at 210° E	16.00	16.00

shading quotations continued to be heard as the week ended.

Shading reports were most numerous on the high octane, including "Q" or leaded gasoline.

Lower prices failed to stimulate any appreciable amount of new buying, sellers said, and shipments against contracts and sales to open market buyers were spotty.

Although the majority of Michigan refiners held to 5 cents and up for straight run gasoline for shipment within the state, a good portion of this gasoline was moving into normal Group 3 marketing territory at prices which were netting the Michigan refiner down to 4.25 cents, f.o.b. refinery.

Kerosine continued to hold up well, both in mid-western and Michigan markets. While shipments of kerosine, as such, were fairly limited, the attention paid to light fuel and range oils has had a steadying influence on kerosine, sellers said.

Coastal

Gasoline Cargoes Sold

N. P. N. News Bureau

NEW YORK, Nov. 1.—The sale of two cargoes of gasoline for export shipment, made late the past week, was the feature of an otherwise inactive gasoline market at the Gulf Coast.

The reported sale consisted of two cargoes of 64-660, 375 end point gasoline, 65 octane number, for European shipment at 6.25 cents f.o.b. the Gulf. One cargo will be lifted the last half of November and the other the first half of December, it was stated.

Traders indicated that regular 65-66, 375 e.p. gasoline, with no guaranteed octane rating, was available for export at 6 cents f.o.b. Gulf. Several said they were doubtful if this figure would bring business as inquiries were few at present. One supplier reported quoting 6.125 cents f.o.b. Gulf on a French inquiry late last week, for this grade of gasoline, but failed to obtain the order.

Several traders said they had been offered gas oil cargoes if they would also purchase a cargo of gasoline. Traders indicated that 68 octane gasoline, U. S. Motor specification, was available at 6.125 cents f.o.b. Gulf, compared to a low of 6.25 cents at the end of the previous week.

Pennsylvania

65 Octane Down 0.25 Cent

N. P. N. News Bureau

CLEVELAND, Nov. 1.—U. S. motor gasoline was offered by all refiners in the field at 5.375 cents per gallon, down 0.125 cent from the previous week. Lower field refiners said they were shipping into upper field territory in some instances, where the price was firm at 6 cents f.o.b. the field.

Upper field shipments of above 65 octane gasoline also continued steady at 7.75 cents, traders reported, but one seller operating in lower field territory was selling higher octane benzol blend at 7.25 cents per gallon. Straight run 65 octane gasoline was relatively scarce, refiners said.

Kerosine was more plentiful as the

(*Continued on page* 52)

Fuel Oil . . . . .

N. P. N. News Bureau

CHICAGO, Nov. 1.—Despite temperatures which have delayed the start of the heating oil season, the wholesale market for light fuel oils continued exceptionally steady, not affected by the lack of consumer demand.

Nos. 1, 2 and 3 grades were offered sparingly throughout the week. Market observers here felt that the absence of free offerings were the only factor keeping open market movement slow.

Industrial fuels, both in the Mid-Western and Michigan markets were soft. Automotive demand in the latter market has not developed as fully as observers expected and heavy Michigan fuel prices were no stronger.

* * *

NEW YORK, Nov. 1.—An announcement of contract prices for bunker C fuel oils, ships' bunkers, for 1938 by Standard of New Jersey, featured eastern seaboard markets the past week.

The company announced it would accept contracts from steamship companies for Grade C bunker at $1.05 a barrel f.o.b. Atlantic Coast terminals for bonded oil and $1.25 a barrel for domestic or duty paid oil for the calendar year 1938. This is an increase of 5 cents a barrel over similar contracts for 1937, the company stated.

No change was announced in spot bunker oil prices or in industrial prices. Several traders said they were expecting a change in these markets shortly.

* * *

TULSA, Nov. 1.—Contract customers began ordering larger quantities of light fuel oils from Mid-Continent sources of supply the last week of October as colder weather in the northern portion of the middle west stimulated consumption. Refiners generally anticipated no new flurry of buying, however, until a cold spell of some intensity occurs.

Most refiners reported that they were having to prorate their production more strictly than in the past few weeks. Buyers who have been seeking supplies in the open market report little success in obtaining their requirements.

The heavy fuel oil was in fair demand from industrial sources, while the railroads were reported taking about their normal amount for this season of the year.

Plan Ill. Refinery

TULSA, Oct. 30.—Reports from Olney, Ill., are that a group of Kansas City men, headed by W. M. Morehead and M. V. Van Trees, plan to build a 5000-barrel skimming plant at Olney.

Kerosine Basis Changed

CLEVELAND, Nov. 2.—Effective Nov. 2, Standard Oil Co. of Ohio has changed its sales policy for basing tank car prices for kerosine sold in 10 counties in northwestern Ohio. These prices, formerly based on Pennsylvania "other districts" prices, as quoted in the daily *Platt's Oilgram*, and weekly NATIONAL PETROLEUM NEWS, will now be based on the central Michigan refinery market as quoted in the *Oilgram*.

The 10 counties are: Defiance, Erie, Fulton, Henry, Lucas, Ottawa, Sandusky, Seneca, Williams and Wood.

Through the rest of Ohio, prices will be based on "other districts" of Pennsylvania, as formerly.

TANK WAGON MARKETS, HEATING OILS

Prices in Effect Nov. 1, 1937

Following are tank wagon prices of various grades of heating oil at the points shown in various territories. Prices are in cents per gallon.

	No. 1	No. 2	No. 3	No. 4
S. O. NEW JERSEY				
Newark, N. J.	*	7.00	7.00	7.00
Atlantic City, N. J.	*	7.00	7.00	7.00
Baltimore, Md.	8.00	7.00	7.00	7.00
Washington, D. C.	8.50	7.75	7.75	7.75
SOCONY-VACUUM OIL CO. INC.				
(S. O. New York Division)				
New York City	*	7.50	7.50	7.50
Albany, N. Y.	*	7.50	7.50	7.50
Rochester, N. Y.	*	7.50	7.50	7.50
Boston, Mass.	*	7.00	7.00	7.00
Bangor, Me.	*	8.00	8.00	8.00
Manchester, N. H.	*	8.00	8.00	8.00
Burlington, Vt.	*	8.00	8.00	8.00
New Haven, Conn.	*	7.50	7.50	7.50
Providence, R. I.	*	7	7	7

*Prices for No. 1 fuel in S. O. New Jersey and Socony-Vacuum territories same as for kerosine, which see in tank wagon table for various cities; prices change with kerosine.

	No. 1	No. 2	No. 3	No. 4
ATLANTIC REFINING				
Philadelphia, Pa.	7.75	7.00	7.00	7.00
Allentown, Pa.	7.75	7.00	7.00	7.00
Wilmington, Del.	8.25	7.50	7.50	7.50
Springfield, Mass.	9.00	7.50	....	7.50
Worcester, Mass.	9.00	7.50	....	7.50
Hartford, Conn.	9.00	7.50	....	7.50

S. O. OHIO

*Ohio Statewide	8.00	8.00	7.50	6.75

Note: S. O. Ohio prices are for hose dumps, bucket dumps are 0.5c per gallon higher.

*Except Cleveland Division and City of Toledo. In Cleveland Division (Cuyahoga, Lake and Geauga counties), No. 1 price is same as statewide; Nos. 2, 3 and 4 are 0.5c higher; No. 5 is priced 0.25c lower than No. 4. In Toledo No. 2 is 0.5c lower than statewide, others same.

S. O. INDIANA

Stanolex Fuel and Furnace Oils

	No. 1 Fuel	Stanolex Furnace
Chicago	†8.8	7.00
Indianapolis	...	*11.8
Detroit	....	7.1
Milwaukee	8	7.3
Minneapolis	7.5	7.5
Sioux City	7.1	7.1
St. Louis	7.5	6.8
Kansas City	6.5	6.5

*Includes state tax of 4c.

†This price applies to 1 to 99 gals. deliveries; 150 gals. and over, 7c.

Note: Small-lot deliveries of light fuel oils range up to 2c higher than above quotations.

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days) unless otherwise stated. Prices in cents per gallon, except heavy fuel oils in dollars per barrel, tank car lots, f.o.b. refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included, unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude,

Cylinder Stocks (cont'd)

Prices Effective	Nov. 1	Oct. 25
Mid-Continent (cont'd)		
120 Vis. at 210° D:		
0 to 10 p.p.	16.00	16.00
10 to 25 p.p.	15.50	15.50
25 to 40 p.p.	15.00	15.00
600 S.R. Dark Green	5.00 – 7.50	5.00 – 7.50
600 S.R. Olive Green	7.00 – 9.50	7.00 – 9.50
631 S.R.	‡14.50	‡14.50
Black Oil	3.50 – 4.00	3.50 – 4.00
CHICAGO (Viscosity at 210°)		
Unfiltered Steam Refined:		
140	9.00	9.00
160	10.00	10.00
200	11.00	11.00
Bright stocks, 160 vis. at 210. No. 8 color:		
0 to 10 p.p.	18.75	18.75
15 to 25 p.p.	17.75	17.75
30 to 40 p.p.	17.25	17.25
E filtered Cyl. Stock	14.50	14.50

To obtain prices delivered in Chicago, add 0.25c per gal.

‡Only one refiner quoting.

Prices Effective	Nov. 1	Oct. 25
WESTERN PENNA.		
600 S.R. filterable	9.00 – 9.50	9.00 – 9.50
650 S.R.	13.50 –14.00	13.50 –14.00
600 fl.	14.00 –14.50	14.00 –14.50
630 fl.	18.00 –18.50	18.00 –18.50
600 Warren E	14.00 –15.50	14.00 –15.50
Bright stock, 145-155 vis. at 210°, 540-550 flash, No. 8 color:		
10 p.t.	19.00 –19.50	19.00 –19.50
15 p.t.	18.00 –18.50	18.00 –18.50
20 p.t.	17.00 –17.50	17.00 –17.50
25 p.t.	16.00 –16.50	16.00 –16.50

Petrolatums

WESTERN PENNA. (Per lb., in barrels, carload lots. In tank cars, 0.5c per lb. less).

Snow white	6.625– 6.75	6.625– 6.75
Lily White	5.625– 5.75	5.625– 5.75
Cream White	4.625– 4.75	4.625– 4.75
Light Amber	2.75 – 2.875	2.75 – 2.875
Amber	2.50 – 2.625	2.50 – 2.625
Red	2.125– 2.375	2.125– 2.375

Wax

Prices Effective	Nov. 1	Oct. 25
WESTERN PENNA. (Per lb., f.o.b. N. Y. basis)		
122-124 w.c. scale, A.m.p.	2.95 – 3.00	2.95 – 3.00
124-126 w.c. scale, A.m.p.	2.95 – 3.00	2.95 – 3.00
OKLAHOMA (Per lb. in bbls.; in a few instances, per lb. in burlap bags).		
124-126 w.c. scale, A.m.p.	3.00 – 3.125	3.00 – 3.125

CHICAGO (In bags, carload lots. Melting points are E.M.P. (A.S.T.M.) methods; add 3° F. to convert into A.m.p.)

Fully refined:		
122-124	4.65 – 4.75	4.65 – 4.75
125-127	4.90 – 5.00	4.90 – 5.00
127-129	5.05 – 5.15	5.05 – 5.15
130-132	**5.45 – 5.55	**5.45 – 5.55
132-134	**5.70 – 5.80	**5.70 – 5.80
135-137	**6.45 – 6.55	**6.45 – 6.55

**Same prices quoted in bags or slabs loose.

MID-WESTERN TANK CAR MARKET

Prices are those made by Chicago sellers, on Group 3 (Oklahoma) freight basis, although shipments may originate in other South-western or Mid-western refining districts

Gasoline

Prices Effective	Nov. 1	Oct. 25
U. S. Motor:		
62 oct. and below	4.125– 4.50	4.25 – 4.75
63-67 oct.	4.75 – 5.25	4.875– 5.375
68-70 oct. (regular)	5.125– 5.625	5.25 – 5.75
60-62, 400 e.p.	4.25 – 4.625	4.375– 4.75
64-66, 375 e.p.	**5.00	**5.00
68-70, 350-360 e.p.	**5.25	**5.25

Kerosine

41-43 w.w.	4.00 – 4.25	4.00 – 4.25
42-44 w.w.	4.125– 4.375	4.125– 4.375

**One seller quoting.

Fuel *and* Gas Oils

Prices Effective	Nov. 1	Oct. 25
Domestic:		
No. 1 p.w.	4.00 – 4.125	4.00 – 4.125
No. 1 straw	3.875– 4.00	3.875– 4.00
No. 2 straw	3.625– 3.75	3.625– 3.75
No. 2 dark	3.50 – 3.625	3.50 – 3.625
No. 3	3.375– 3.50	3.375– 3.50
No. 4	$1.05 –$1.10	$1.05 –$1.10
No. 5	$0.80 –$0.85	$0.80 –$0.85
Range oil	4.00 – 4.125	4.00 – 4.125
Industrial:		
No. 4	$0.95 –$1.10	$0.95 –$1.10
No. 5	$0.80 –$0.85	$0.80 –$0.85

Prices Effective	Nov. 1	Oct. 25
Industrial (cont'd)		
No. 6	$0.675–$0.725	$0.675–$0.725
U. G. I. gas oil	2.875– 3.25	2.875– 3.25

Naphtha and Solvent

Stoddard solvent	6.375– 6.875	6.875
Cleaners' naphtha	6.875– 7.375	7.375
V. M. & P. naphtha	6.875– 7.375	7.375
Mineral spirits	5.875– 6.375	6.375
Rubber solvent	6.875– 7.375	7.375
Lacquer diluent	7.875– 8.375	8.375

DAILY GASOLINE PRICES

Daily range of gasoline prices as reported in PLATT'S OILGRAM, (Week Ended Oct. 29, 1937)

U. S. Motor, (Octane Number determined according to L-3 Method):	Oct. 25	Oct. 26	Oct. 27	Oct. 28	Oct. 29
62 octane and below:					
Oklahoma	4.50 – 4.875	4.50 – 4.75	4.75 – 5.00	4.50 – 4.75	4.375– 4.625
*North Texas	4.75 – 5.00	4.75 – 5.00	4.75 – 5.00	4.75 – 5.00	4.625– 4.875
West Texas	4.75 – 5.00	4.75 – 5.00	4.75 – 5.00	4.75 – 5.00	4.625– 4.875
63-66 octane:					
Oklahoma	5.00 – 5.375	5.00 – 5.25	5.25 – 5.375	5.00 – 5.25	4.875– 5.125
*North Texas	5.375– 5.50	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50	5.125– 5.375
West Texas	5.375	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375	5.125– 5.375
67-69 octane:					
Oklahoma	5.375– 5.625	5.375– 5.625	5.50 – 5.75	5.375– 5.625	5.125– 5.375
*North Texas	5.625– 5.75	5.625– 5.75	5.625– 5.75	5.625– 5.75	5.50 – 5.75
West Texas	5.625	5.625	5.625	5.625	5.50 – 5.625
70-72 octane:					
Oklahoma	5.75 – 6.00	5.625– 6.00	5.875– 6.00	5.75 – 6.00	5.50 – 5.875
*North Texas	5.875– 6.00	5.875– 6.00	5.875– 6.00	5.875– 6.00	5.75 – 6.00
West Texas	6.00	6.00	6.00	6.00	5.75 – 6.00
U. S. Motor, Mid-Western Market (Group 3 Basis):					
62 octane and below	4.25 – 4.75	4.25 – 4.75	4.25 – 4.75	4.25 – 4.75	4.125– 4.50
63-67 octane	4.875– 5.375	4.875– 5.375	4.875– 5.375	4.875– 5.375	4.75 – 5.25
68-70 octane (regular)	5.25 – 5.75	5.25 – 5.75	5.25 – 5.75	5.25 – 5.75	5.125– 5.625
Motor Gasoline, 60-64 oct.					
New York harbor	†7.25 – 7.75	†7.25 – 7.75	†7.25 – 7.75	†7.25 – 7.75	†7.25 – 7.75
Philadelphia district	†7.25	†7.25	†7.25	†7.25	†7.25
Baltimore district	†7.25 – 7.50	†7.25 – 7.50	†7.25 – 7.50	†7.25 – 7.50	†7.25 – 7.50
Motor Gasoline, 65 oct. & above					
New York harbor	†7.50 – 8.00	†7.50 – 8.00	†7.50 – 8.00	†7.50 – 8.00	†7.50 – 8.00
Philadelphia district	†7.50	†7.50	†7.50	†7.50	†7.50
Baltimore district	†7.50 – 7.75	†7.50 – 7.75	†7.50 – 7.75	†7.50 – 7.75	†7.50 – 7.75
U. S. Motor, 58-62°					
Bradford-Warren (Western Penna.)	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
Other districts (Western Penna.)	5.50 – 5.625	5.50 – 5.625	5.375– 5.625	5.375– 5.625	5.375– 5.625
Motor Gasoline, Min. 60 oct.					
Bradford-Warren (Western Penna.)	†7.50 – 7.75	†7.50 – 7.75	†7.50 – 7.75	†7.50 – 7.75	†7.50 – 7.75
Other districts (Western Penna.)	7.375– 7.75	7.25 – 7.625	7.25 – 7.625	7.25 – 7.625	7.25 – 7.625
Motor Gasoline, Min. 65 oct.					
Bradford-Warren (Western Penna.)	†7.75 – 8.00	†7.75 – 8.00	†7.75 – 8.00	†7.75 – 8.00	†7.75 – 8.00
Other districts (Western Penna.)	7.50 – 8.00	7.375– 7.875	7.25 – 7.875	7.25 – 7.875	7.25 – 7.875

*For shipment to Texas and New Mexico destinations: Group 3 prices are quoted on northern shipment.
†Nominal.

TANK WAGON MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect Nov. 1, 1937, as posted by principal marketing companies at their headquarters offices, but subject to later corrections

S. O. New Jersey

ESSOLENE

	Consumer Tank Car	Dealer T.W.	Taxes	Posted S.S.	Kerosine T.W.
Atlantic City, N. J.	8	9.5	4	*	9
Newark, N. J.	8	9.5	4	*	9
Annapolis, Md.	9.1	10.6	5	*	9.5
Baltimore, Md.	8.5	10	5	18.5	9
Cumberland, Md.	9.9	12.4	5	*	10
Washington, D. C.	8	9.5	3	16	9.5
Danville, Va.	9.7	12.2	6	*	12.9
Norfolk, Va.	8.5	11	6	*	11.5
Petersburg, Va.	8.8	11.3	6	*	11.7
Richmond, Va.	8.8	11.3	6	*	11.7
Roanoke, Va.	10	12.5	6	*	12.9
Charleston, W. Va.	9.3	11.8	6	*	12.6
Parkersburg, W. Va.	8.6	11.1	6	*	11.2
Wheeling, W. Va.	9.5	11	6	*	12.2
Charlotte, N. C.	9.9	12.4	7	*	12.6
Hickory, N. C.	10.4	12.9	7	*	13
Mt. Airy, N. C.	10.2	12.7	7	*	12.8
Raleigh, N. C.	9.5	12	7	*	12.1
Salisbury, N. C.	10	12.5	7	*	12.7
Charleston, S. C.	8.5	11	7	*	11.1
Columbia, S. C.	9.5	12	7	*	12.1
Spartanburg, S. C.	10.2	12.7	7	*	12.9

*S. O. New Jersey transferred stations to dealers; no prices available.

Price basis to undivided dealers: Dealer t.w. price less 0.5c per gal.

Price basis to commercial consumers: To contract accounts, purchasing at least one full compartment at a time by hose connection: Effective March 12, 1937, in New Jersey, and March 8 in Maryland, District of Columbia, and in Arlington and Fairfax Counties in Virginia, on yearly purchases: from 2,500 to 100,000 gals., consumer t.w. price at time and place of delivery; 100,000 gals. per year, consumer tank car price, plus 0.5c per gal. Generally consumer t.w. price in foregoing states is equivalent of dealer t.w. price, less 0.5c per gal.

Effective May 15, 1937, on Essolene and Esso (by tank wagon) in North and South Carolina, West Virginia and Virginia (except Arlington and Fairfax Counties, which see above), commercial consumers taking deliveries of 50 gals. (West Va. 100 gals.) or more at one time will be billed at the posted consumer t.w. price. Deliveries less than 50 gals. (West Va. 100 gals.) will be billed at 4c per gal. over posted consumer t.w. price. Generally, posted consumer t.w. price will be equivalent to the dealer price less 0.5c per gal.

Kerosine Discount: 1c off t.w. price for 25 gals or more, under contract thru territory (Baltimore City contract not necessary) except no discount in state of New Jersey.

Socony-Vacuum Oil Co., Inc.

(S. O. New York Division)

SOCONY MOBILGAS

	Consumer Tank Car	"Split" Dealer T.W.	Taxes	"Split" Total Dealer T.W.	Kerosine T.W.
Metropolitan N. Y. City: Boroughs of Manhattan, Bronx and Brooklyn (Kings and Queens)	8.5	10	*5	15	9
Borough of Richmond (Staten Is.)	8.5	10	*5	15	9
Albany, N. Y.	8.5	10	5	15	9
Binghamton, N. Y.	9.25	10.8	5	15.8	9
Buffalo, N. Y.	9.04	10.05	5	15.05	8.5
Jamestown, N. Y.	8.78	11.3	5	16.3	8.25
Plattsburg, N. Y.	8.9	10.9	5	15.9	9.5
Rochester, N. Y.	9.17	10.5	5	15.5	8.5
Syracuse, N. Y.	9.12	10	5	15	9.5
Danbury, Conn.	8.8	10.3	4	14.3	9
Hartford, Conn.	8.6	10.1	4	14.1	9
New Haven, Conn.	8.5	10	4	14	9
Bangor, Me.	9.1	8.8	5	13.8	9.5
Portland, Me.	8.5	10.3	5	15.3	8.75
Boston, Mass.	8.5	9	4	13	8.5
Concord, N. H.	9.2	11.8	5	16.8	9.5
Lancaster, N. H.	10.1	12.8	5	17.8	10.25
Manchester, N. H.	9	11.3	5	16.3	9.5
Providence, R. I.	8.5	10	4	14	8.5
Burlington, Vt.	8.9	10.9	5	15.9	9.5
Rutland, Vt.	9.2	11.2	5	16.2	9

*Plus 2% city sales tax computed at time of each sale.

Note: Socony-Vacuum has transferred all service stations to dealers; no prices available.

Price basis to undivided dealers: 0.5c less than "split" dealer t.w.

Price basis to commercial consumers: Effective about Nov. 15, 1936 in New York and New England, for tank wagon delivery: monthly purchases of 25,000 gals. or over, pay consumer tank car price at point of delivery, plus 0.5c gal.; monthly purchases of 5,000 to 25,000 gals., pay undivided dealer tank wagon price at point of delivery; monthly purchases of less than 5,000 gals., pay divided dealer tank wagon price at point of delivery. Private consumers pay undivided dealer tank wagon price at point of delivery, plus 2c gal.

Atlantic Refining

ATLANTIC WHITE FLASH GASOLINE

	Commercial Tank Car	All Tax	Total Dealer T.W.	S.S.	Kerosine T.W.
Philadelphia, Pa.	7.5	5	14	17	10.5
Pittsburgh	8.5	5	15.5	20	11
Allentown	8.5	5	15	**	11
Erie	8	5	14.5	**	10
Scranton	8.5	5	15	**	11
Altoona	8.5	5	15.5	**	11
Harrisburg	8.5	5	15	**	11
Williamsport	8.5	5	15.5	**	11
Dover, Del.	...	5	14.5	**	11
Wilmington	...	5	13.5	**	11
Boston, Mass.	...	4	13	**	8.5
Springfield, Mass.	...	4	13.3	**	9
Worcester, Mass.	...	4	14.3	**	9
Fall River, Mass.	...	4	13	**	8.5
Hartford, Conn.	...	4	14.1	**	9
New Haven, Conn.	...	4	14	**	9
Providence, R. I.	...	4	14	**	8.5
Atlantic City, N. J.	...	4	13.5	**	9
Camden, N. J.	...	4	13.5	**	9
Trenton, N. J.	...	4	13.5	**	9
Annapolis, Md.	...	5	15.6	**	9.5
Baltimore, Md.	...	5	15	**	9
Hagerstown, Md.	...	5	16	**	10
Richmond, Va.	...	6	16.3	**	11.7
Wilmington, N. C.	...	7	18.1	**	11.3
Brunswick, Ga.	...	7	16	**	*13
Jacksonville, Fla.	...	8	17.5	**	11

*Georgia has kerosine tax of 1c per gal., not included in above price.

**Atlantic Refining transferred stations to dealers; no prices available.

Price basis to undivided dealers: Dealer t.w. less 0.5c per gal

Price basis to commercial consumers: in Penna. and Delaware, effective Mar. 11, 1937, on yearly gasoline purchases to contract accounts taking full compartment hose deliveries, using 100,000 gals. or more per year, tank car price plus 0.5c per gal.; consumers taking less than 100,000 gals., undivided dealer price. Consumers under contract and not under contract, taking less than full compartment delivery, and consumers not under contract taking full compartment delivery, get divided dealer price. Consumers taking less than 25 gals., t.w delivery, get 4c above undivided dealer price.

Discount on kerosine: Effective Oct. 29, 1936, in Pennsylvania and Delaware 2c per gal. off t.w. price on t.w. deliveries of 25 gals. or more at one time.

S. O. Ohio

SOHIO X-70 GASOLINE

	All Tax	**Consumer T.W.	**Commercial T.W.	†Divided Dlr.	Kerosine T.W.
Ohio State-Wide	5	17	....	16	*13.5
Allen, Auglaize, Champaign, Darke, Logan, Lorain, Mercer, Putnam, Shelby and Van Wert counties:	5	17	15.5	16	....
Defiance county	5	16	....	15	....
Counties where prices are below statewide:					
Columbiana	5	16.5	....	15.5	....
Franklin, Knox and Pickaway	5	16	....	15	....
Paulding	5	15.5	14	14.5	....
RENOWN GASOLINE (Third Grade)					
Ohio State-Wide	5	16.5	....	15.5	....
Allen, Auglaize, Champaign, Logan, Lorain, Mercer, Putnam, Shelby and Van Wert counties:	5	16.5	15	15.5	....
Defiance county	5	15.5	....	....	....
Erie, Fulton, Lucas, Ottawa, Sandusky, Williams and Wood	5	16.5	....	15.5	....
Hamilton county	5	17	....	16	....
Counties where prices are below statewide:					
Columbiana	5	16	....	15	....
Franklin, Knox and Pickaway	5	15.5	....	14.5	....
Paulding	5	15	13.5	14	....
Counties where prices are above statewide: Butler, Clermont, Greene, Hocking, Miami, Montgomery, Preble and Warren	5	17	....	16	....
Darke county	5	17	15.5	16	....

S. O. Ohio Cont'd

KEROSINE PRICES

(Off Statewide Level)

Kerosine prices are off statewide level in the following counties:

Washington	*13
Allen, Auglaize, Champaign, Columbiana, Darke, Geauga, Greene, Hardin, Logan, Mahoning, Mercer, Preble, Putnam, Shelby, Trumbull, Union, Van Wert and Wyandot:	*12.5
Paulding	*12
Ashtabula	*11.5
Fayette, Licking, Madison, Pickaway, Portage and Summit	*9.5

*Kerosine prices include 1c state tax.

**Commercial consumer t.w. posted price discontinued statewide, Oct. 20, 1937, except in 11 counties, these being: Allen, Auglaize, Champaign, Darke, Logan, Lorain, Mercer, Paulding, Putnam, Shelby and Van Wert.

Commercial Tank Wagon Q.D.A. to contract accounts: Effective Oct. 20, 1937, thru Ohio (except in 23 counties), on monthly purchases, off posted consumer t.w. price: 0 to 999 gals., 1c; 1,000 to 19,999 gals., 1.5c; 20,000 gals. and over, 2.5c. The 23 counties where Q.D.A. differs from statewide are: Allen, Auglaize, Champaign, Darke, Defiance, Erie, Fulton, Hamilton, Henry, Logan, Lorain, Lucas, Meigs, Mercer, Ottawa, Paulding, Putnam, Sandusky, Scioto, Shelby, Van Wert, Williams and Wood.

†This price also to authorized agents, exclusive of 0.5c rental.

Sales tax: Ohio's 3% sales tax, effective Jan. 27 1935, is added "where assessable, to regular posted prices", S. O Ohio says.

On kerosine, prices to resellers and commercial consumers are posted generally at 3c per gal. below consumer t.w. price in any quantity, when such prices are on state-wide level.

S. O. Kentucky

CROWN GASOLINE

(Regular Grade)

	Consumer T.W.	All Tax	Total Consumer T.W.	Net Dlr.	Kerosine T.W.
Covington, Ky.	13.5	6	19.5	16.5	11
Lexington, Ky.	14	6	20	17	11
Louisville, Ky.	14	6	20	17	10.5
Paducah, Ky.	14	6	20	17	10
Jackson, Miss.	13	7	20	17	*13
Vicksburg, Miss.	13	7	20	17	*13
Birmingham, Ala.	12	*8	20	17	12
Mobile, Ala.	13	*9	22	19	11
Montgomery, Ala.	13	*9	22	19	*14.5
Atlanta, Ga.	14	7	21	18	*12
Augusta, Ga.	14	7	21	18	*14
Macon, Ga.	14.5	7	21.5	18.5	*14.5
Savannah, Ga.	12	7	19	16	*12
Jacksonville, Fla.	13	7	20	17	10
Miami, Fla.	12.5	8	20.5	17.5	12.5
Pensacola, Fla.	13	*9	22	19	12
Tampa, Fla.	11	8	19	16	10.5

KYSO GASOLINE

(Third Grade)

Covington, Ky.	12	6	18	15.5	....
Lexington, Ky.	12.25	6	18.25	15.75	....
Louisville, Ky.	12	6	18	15.5	....
Paducah, Ky.	12	6	18	15.5	....
Jackson, Miss.	11.5	7	18.5	16	....
Vicksburg, Miss.	11.5	7	18.5	16	....
Birmingham, Ala.	10.5	*8	18.5	16	....
Mobile, Ala.	10.5	*9	19.5	17	....
Montgomery, Ala.	10.5	*9	19.5	17	....
Atlanta, Ga.	12	7	19	16.5	....
Augusta, Ga.	12	7	19	16.5	....
Macon, Ga.	12.5	7	19.5	17	....
Savannah, Ga.	9.5	7	16.5	14	....
Pensacola, Fla.	11	*9	20	17.5	....

Discounts to all tank wagon consumers: Effective Jan. 4, 1937, thru territory, on Crown gasoline, 3c per gal. below consumer t.w. price; on Kyso, 2.5c below, regardless of quantity purchased, per month.

Discounts on kerosine: Prices in Kentucky are net, but in other states subject to 2c discount.

Taxes: in the tax column is included these city and county gasoline taxes at the following points: Mobile, 2c city; Birmingham, 1c city; Montgomery, 1c city and 1c county; Pensacola, 1c city. Georgia and Mississippi kerosine prices include 1c state tax. Montgomery kerosine price includes 1c city tax.

Above prices include these inspection fees on both gasoline and kerosine, per gallon, figured on basis of 50 gallons per barrel.

Alabama, 1/40c on gasoline, 1/2c on kerosine; Arkansas, 1/5c per gal. in a single barrel, 1/20c per gal. in bulk; Florida, 1/8c; Illinois, 3/100c; Indiana, 1/2c per gal. in a single barrel; 3/10c per gal. in lots of 2 to 10 bbls., 1/5c for 10 to 50 bbls., 2/25c for over 50 bbls.; Kansas, 1/50c, (3/50c can be charged to meet inspection department expenses); Louisiana, 1/32c; Minnesota, 1/25c; Missouri, 3/100c; Nebraska, 3/100c; Nevada, gasoline, 1/20c; North Carolina, 1/4c; North Dakota, 1/20c; Oklahoma, 2/25c per gal., in lots of more than 50 bbls., 1/5c in lots less than 50 bbls.; South Carolina, 1/8c; South Dakota, 1 10c; Tennessee, 2/5c; and Wisconsin, 1/25c.

Kerosine inspection fee only: Iowa, 2/25c; Michigan, 4/5c per gal. for first 2 bbls.; 3/5c for next 3; 2/5c for next 5; 3/10c for next 15, and 1/5c per gal. in lots over 25 bbls

TANK WAGON MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect Nov. 1, 1937, as posted by principal marketing companies at their headquarters offices, but subject to later corrections

S. O. Indiana

	Tax	Red Crown Total Cons. T.W.	Dealer Prices Red Crown	Stanolind	Kerosine T.W.
Chicago, Ill.	4	15.5	13.5	12	10.1
Decatur, Ill.	4	15.5	14	12	10.1
Joliet, Ill.	4	15.5	14	13.5	10.1
Peoria, Ill.	4	15.5	14	13.5	10.1
Quincy, Ill.	4	15.3	13.8	12.4	9.9
Indianapolis, Ind.	5	17.2	15.7	14.7	*14.8
Evansville, Ind.	5	17	15.5	13	*14.6
South Bend, Ind.	5	17.4	15.9	15.4	*13.6
Detroit, Mich.	4	15.4	13.9	13.4	9.8
Grand Rapids, Mich.	4	16.5	15	14.5	10.9
Saginaw, Mich.	4	16.3	14.8	14.3	8.5
Green Bay, Wis.	5	17.2	15.7	14.7	10.8
Milwaukee, Wis.	5	16.8	15.3	14.2	10.4
La Crosse, Wis.	5	16.9	15.4	14.9	10.5
Minneapolis-St. Paul.	5	16.9	15.4	14.9	10.5
Duluth, Minn.	5	17.3	15.8	15.3	10.9
Mankato, Minn.	5	16.9	15.4	14.9	10.5
Des Moines, Ia.	4	15.3	13.8	12.4	*12.9
Sioux City, Ia.	4	15.5	14	13.5	*13.1
Davenport, Ia.	4	15.5	14	13.5	*13.1
Mason City, Ia.	4	15.7	14.2	13.7	*13.3
St. Louis, Mo.	*4	15.2	13.7	11.2	9.8
Kansas City, Mo.	*4	14.9	13.4	12.9	8
St. Joseph, Mo.	*4	14.9	12.4	12	9
Fargo, N. D.	4	16.9	15.4	14.9	11.5
Minot, N. D.	4	18.1	16.6	16.1	12.7
Huron, S. D.	*5	17.3	15.8	15.3	*10.9
Wichita, Kans.	4	14.4	12.9	11.5	8

*Taxes: in the tax column is included these city and state gasoline taxes at following points: Kansas City, St. Joseph and St. Louis, 1c city tax; South Dakota, 0.1c sales tax. State Kerosine taxes: Indiana, 4c; Iowa, 3c, all included in above prices.

Discount to commercial consumers: Effective Jan. 1, 1935, thru territory, except Michigan effective Feb. 1, on purchases per month, discount off t.w. prices; all gasolines, 25 to 1,000 gals., at t.w. price; 1,000 gals., or more, 1.5c off t.w. on Ethyl and Red Crown, and 1c on Stanolind (latter effective June 9, 1937). Minimum delivery is 25 gals.

S. O. Nebraska

STANDARD RED CROWN GASOLINE

	All Tax	T.W. Total	Dealer Total	Kerosine T.W.
Omaha, Neb.	6	17.9	16.4	10.4
McCook	6	18	14	10
Norfolk	6	18.3	16.8	10.8
North Platte	6	18.7	17.2	11.2
Scottsbluff	6	19.4	15.9	11.9

Discounts to commercial consumers: for tank wagon deliveries covered only by Standard Commercial Consumer Contract, effective January 1, 1935.

S. O. Louisiana

ESSOLENE

	Consumer Tank Car	Dealer T.W.	Tax-es	Posted S.S.	Kerosine T.W.
Little Rock, Ark.	8.5	11	7.5	**	11.5
Alexandria, La.	8.5	11	8	**	*12
Baton Rouge, La.	8	10.5	8	22	*12
New Orleans, La.	8	10.5	*10	24	*13
Lake Charles, La.	9	11.5	8	**	*12.5
Shreveport, La.	7.5	10	8	**	*9.5
Lafayette, La.	9	11.5	8	**	*13
Bristol, Tenn.	11	12.25	8	**	14.5
Chattanooga, Tenn.	10.5	13	8	**	13.5
Knoxville, Tenn.	11	13.5	8	**	14
Memphis, Tenn.	9	11.5	8	**	12
Nashville, Tenn.	10	12.5	8	**	11.5

*New Orleans gasoline tax includes 7c state, 1c federal, and 2c parish tax. Louisiana kerosine prices include 1c state tax; in addition New Orleans has 1c parish tax.

**S. O. Louisiana transferred stations to dealers; no prices available.

Price basis to dealers: Undivided dealers get dealer price, less 0.5c

Price basis to commercial consumers: Effective May 15, 1937, thru territory; commercial consumers taking 50 gals. or more at one time will be billed at posted consumer t.w. price; those taking less than 50 gals. at one time will be billed at 4c per gal. over posted consumer t.w. price. Generally, the posted consumer t.w. price will be equivalent to the dealer price less 0.5c per gal.

Humble Oil & Refining Co.

HUMBLE MOTOR FUEL

	*T.W.	*Total Taxes	T.W.	S.S.	Kerosine T.W.
Dallas, Tex.	8.5	5	13.5	17	8
Ft. Worth, Tex.	8.5	5	13.5	17	8
Houston, Tex.	9.5	5	14.5	18.5	8
San Antonio, Tex.	8.5	5	13.5	17	8

U. S. Motor Gasoline
(Third Grade)

Dallas, Tex.	7	5	12	14
Ft. Worth, Tex.	7	5	12	14
Houston, Tex.	8.5	5	13.5	16.5
San Antonio, Tex.	7	5	12	14

*Price is t.w. price to all classes of dealers and consumers.

Price basis to dealers: to contract dealers consumer accounts off posted retail price: when posted retail price, including all taxes on Esso motor fuel is: 19.1c per gal. and above discount is 4c; 19c to 18.1c, 3.5c, and 18c and below, 3c. Humble motor fuel, 17.1c and above, 4c; 17 to 16.1c, 3.5c; and 16c and below, 3c; U. S. motor fuel, 15.1c and above, 3c; 15 to 14.1c, 2.5c; and 14c and below, 2c.

Continental Oil

	Conoco Bronze Ex-Tax	All Tax	Dealer Prices Total Conoco Bronze	Demand	Kerosine T.W.
Denver, Colo.	12.5	5	17.5	16.5	11.5
Grand Junc., Colo.	15	5	20	19	15
Pueblo, Wyo.	11	5	16	14	10.5
Casper, Wyo.	13	5	18	17	11.5
Cheyenne, Wyo.	13	5	18	17	13
Billings, Mont.	14	6	21	18	15.5
Butte, Mont.	13.5	6	19.5	16.5	15.5
Great Falls, Mont.	15.5	6	21.5	20.5	15.5
Helena, Mont.	15.5	6	21.5	20.5	15.5
Salt Lake City, Utah.	14.5	5	19.5	16.5	16
Boise, Ida.	15.5	6	21.5	20.5	18
Twin Falls, Ida.	15.5	6	21.5	20.5	18
Albuquerque, N. M.	11	†6.5	17.5	16.5	12
Roswell, N. M.	12	†6.5	18.5	15	10.5
Santa Fe, N. M.	13	*7	20	16.5	12
Muskogee, Okla.	10	5	15	13	7
Oklahoma City, Okla.	9	5	14	12	8
Tulsa Okla.	9	5	14	11	6
Ft. Smith, Ark.	10.5	5	15.5	13.5	8
Little Rock, Ark.	10.5	7.5	18	15.125	9.5
Texarkana, Ark.	10.5	5	15.5	12.5	8.5

†Includes city tax of 0.5c.
*Includes 1c city tax

S. O. California

STANDARD GASOLINE

	T.W.	Taxes	Total T.W.	S.S.	Kerosine T.W.
San Francisco, Cal.	13.5	4	17.5	18.5	11.5
Los Angeles, Cal.	13	4	17	18	9
Fresno, Cal.	14.5	4	18.5	19.5	12
Phoenix, Ariz.	15	6	21	22	†16
Reno, Nev.	15	5	20	21	13
Portland, Ore.	14	6	20	21	13.5
Seattle, Wash.	14	6	20	21	13.5
Spokane, Wash.	17	6	23	24	16.5
Tacoma, Wash.	14	6	20	21	13.5

FLIGHT GASOLINE
(Third Grade)

San Francisco, Cal.	12	4	16	17	....
Los Angeles, Cal.	11.5	4	15.5	16.5	....
Fresno, Cal.	13	4	17	18	....
Reno, Nev.	13.5	5	18.5	19.5	....
Phoenix, Ariz.	13.5	6	19.5	20.5	....
Portland, Ore.	12.5	6	18.5	19.5	....
Seattle, Wash.	12.5	6	18.5	19.5	....
Spokane, Wash.	15.5	6	21.5	22.5	....
Tacoma, Wash.	12.5	6	18.5	19.5	....

†Includes 5c state tax

Discount to dealers: on gasoline, off t.w. price on Standard Ethyl and Standard Gasoline, to 100% dealers, 3c; to split dealers, 2c; on Flight gasoline, both 100% and split dealers, 2c.

On Stanavo Aviation Gasoline, to all classes of dealers, 3c off t.w

To commercial consumers: off tank wagon price: on single deliveries of 40 gallons and over, Stanavo Aviation, Standard Ethyl and Standard Gasolines, 3c. Flight Gasoline, 2c per gallon. Tank wagon delivery, less than 40 gals., 1c per gal. above posted t.w. price.

On kerosine in tank car, transport truck and trailer delivery, 3c off t.w. price; plant deliveries to jobbers, 2.5c below t.w.

Canada

PRICES OF IMPERIAL OIL LTD.

Per Imperial Gallon, which is 1.2 U. S. Gallons

3-STAR IMPERIAL GASOLINE

	T.W.	Taxes	Total T.W.	Kerosine T.W.
Hamilton, Ont.	16	6	22	17
Toronto, Ont.	16	6	22	17
Brandon, Man.	22.8	7	29.8	22.3
Winnipeg, Man.	20.5	7	27.5	20.7
Regina, Sask.	22.5	7	29.5	22
Saskatoon, Sask.	25.3	7	32.3	24.8
Edmonton, Alta.	22.5	7	29.5	24.2
Calgary, Alta.	20	7	27	21.5
Vancouver, B. C.	16	7	23	23
Montreal, Que.	15	6	21	17.5
St. John, N. B.	16	8	24	18.5
Halifax, N. S.	16	8	24	18.5

Note: Imperial Oil Ltd. has completed transfer of service stations to dealers; no s.s. prices available.

Discounts to undivided dealers, 1c off t.w price, except Maritime Provinces where undivided dealers pay t.w. price. Divided dealers pay t.w. price, thru territory.

Aviation Gasoline

Following are tank car and/or tank wagon prices of aviation gasoline in principal marketing territories (Stanavo aviation in all territories except Continental Oil and unless otherwise noted). Tax column includes 1c federal tax, and state tax; also municipal taxes as indicated in footnotes. Prices in first four territories do not include state or federal taxes.

S. O. NEW JERSEY

	*Ethyl T.C.	Tank Car	T.W.
Bayonne, N. J.	19.5	9.5	12.5
Baltimore, Md.	....	10	12.5
Washington, D. C.	....	....	13.1
Richmond, Va.	....	....	14.7
Greensboro, N. C.	....	....	15.7
Raleigh, N. C.	....	....	17.6
Charleston, W. Va.	....	....	12.2

*This is Stanavo Ethyl Aviation Gasolin 100 octane number, tank car price.

COLONIAL BEACON OIL CO.

	T.W.
Brooklyn, N. Y.	12.8
Buffalo, N. Y.	14.5
Boston, Mass.	15

S. O. PENNSYLVANIA

Philadelphia, Pa.	13.6
Pittsburgh, Pa.	14.4

S. O. LOUISIANA

New Orleans, La.	13.3
Shreveport, La.	13.6

Prices in above four territories are on a 74 octane grade aviation gasoline except where otherwise noted. An 80 octane product generally brings 0.5c premium and an 87 octane product, 1.5c premium over the 74 octane grade.

Note: S.s. prices in above four territories are generally 6c over t.w. prices. Above t.w. prices are net, with no discounts allowed for quantity purchases. T.w. prices are generally tank car price, plus freight, plus 2.5c per gal.

S. O. OHIO
Thru Ohio

	Consumer T.W.	Tax	Total Consumer T.W.
Stanavo Ethy Aviation:			
73 octane	15.5	5	20.5
80 octane	16.5	5	21.5
87 octane	17.5	5	22.5

Discounts: For delivery on contract to hangar operators and resellers: 2c below consumer posted t.w. price, shown above.

S. O. INDIANA

Chicago, Ill.	14.5	4	18.5
Detroit, Mich.	16	4	20
Milwaukee, Wisc.	14.8	5	19.8
Minneapolis, Minn.	14.9	5	19.9
St. Louis, Mo.	14.2	*3	17.2
Kansas City, Mo.	13.9	*4	17.9
Fargo, N. D.	15.9	4	19.9
Huron, S. D.	15.3	5	20.3

*Includes 1c city tax.
**Includes 0.1c to cover.

HUMBLE OIL & REFINING CO.

	Tank Car
Baytown, Tex. (exclusive of taxes)	8.5

CONTINENTAL OIL CO.

	Dealer	Tax	Total Dealer
Denver, Colo.	15.5	5	20.5
Cheyenne, Wyo.	16	5	21
Helena, Mont.	18.5	6	24.5
Salt Lake City, Utah.	17.5	5	22.5
Albuquerque, N. M.	14	*6.5	20.5

*Includes city tax of 0.5c.

S. O. CALIFORNIA

Phoenix, Ariz.	17	6	23
Los Angeles, Cal.	15	4	19
San Francisco, Cal.	15.5	4	19.5
Reno, Nev.	17	5	22
Portland, Ore.	16	6	22
Seattle, Wash.	16	6	22
Spokane, Wash.	19	6	25

Note: For discounts, etc., see note under Standard and Flight gasoline above.

TANK WAGON MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect Nov. 1, 1937, as posted by principal marketing companies at their headquarters offices, but subject to later corrections

Naphtha (In Tank Wagon)

S. O. NEW JERSEY

Posted Tank Wagon Prices

	Mineral Spirits	V.M.&P.
Newark, N. J.	12.5	15.5
Baltimore, Md.	15.5	....
Washington, D. C.	15	....

Discounts: Buyers taking following quantities, at one time, get these discounts: Newark, 2c per gal. on 200 gals. or more; less than 200 gals., 0.5c higher price. Baltimore 2c off on 25 to 100 gals. and 3c on over 100 gals. Washington, 2c off to contract buyers.

SOCONY-VACUUM OIL CO.

Buffalo, N. Y.	13	14
New York City	10.5	11.5
Rochester, N. Y.	13	15
Syracuse, N. Y.	14	15
Boston, Mass.	13.5	14
Bridgeport, Conn.	12.5	14
Hartford, Conn.	12	13.5
Providence, R. I.	13.5	14.5

ATLANTIC REFINING CO.

Philadelphia, Pa.	11.5	12.5
Lancaster, Pa.	13	14
Pittsburgh, Pa.	12.5	14.5

Note: Prices for Mineral Spirits also apply to Stoddard Solvent; and prices for V.M.&P. Naphtha apply also to Light Cleaners Naphtha.

S. O. OHIO

	S.R. Solvent	V.M.&P. Naphtha
Thru Ohio	13.25	13.75

Note: V.M.&P. Naphtha prices also apply on Dry Cleaners naphtha and special Varnolene; Varnolene and Sohio Solvent 0.5c below these prices. Discounts to contract consumers, off t.w. price: 300 to 999 gals., 0.5c; 1,000 to 2,499 gals., 0.75c; 2,500 to 4,999 gals., 1c; 5,000 or more gals., 1.5c.

S. O. INDIANA

(Prices include state and federal taxes

	Oleum Spirits	V.M.&P. Naphtha	Stanisol
Chicago, Ill.	15.8	16.1	15.5
Detroit, Mich.	19.2	18.2	19.3
Kansas City, Mo.	14.4	15.4	14.4
St. Louis, Mo.	14.7	15.7	14.6
Milwaukee, Wis.	19.3	20.3	19.3
Minneapolis, Minn.	19.4	20.4	18

Note: Prices for V. M. & P. apply also to Light Cleaners Naphtha. All prices, with exception of Missouri points, include state tax. Prices shown are base prices, before discounts.

Naphtha (In Tank Cars)

In Tank Cars (F. o. b. refinery or seaboard terminal except Ohio, delivered price.)

	V.M.&P. Naphtha	Solvent
Baltimore	11	10
New York Harbor	10.5–11	9.5
Philadelphia district	11	10
Boston	10.5	10
Providence	10.5	10
Ohio points, delivered	9.75	*9.25

*This is on S.R. solvent.

Note: In Ohio, prices on D.C. naphtha and special Varnolene are same as V.M.&P.; on Varnolene and Sohio Solvent, prices are 0.5c less than on V.M.&P.

Latest Changes

From Oct. 26 to Nov. 1 inclusive. Dates and amounts of changes shown. See table for full current prices.

Continental Oil—Demand Gasoline:
Oklahoma City, up 1c, Oct. 26.

Kerosine:
Tulsa, cut 1c, Oct. 27.

Aviation Gasoline

S. O. New Jersey:
Charleston, t. w. cut 3c, Oct. 26.

Corrections

Notation of amount of change and dates not previously shown in table. Table in this issue is corrected to show these changes.

S. O. Kentucky—Crown Gasoline:
Jackson, cut 1c, Oct. 12.
Vicksburg, cut 0.5c, Oct. 12.
Jacksonville, cut 0.5c, Oct. 15.

Kyso:
Jackson, cut 1c, Oct. 12.
Vicksburg, cut 0.5c, Oct. 29.

Kerosine:
Miami, up 0.5c, Oct. 19.

Pennsylvania

(Continued from page 48)

week closed and refiners who had been as much as two weeks behind on shipments said they were now taking care of their regular customers. Prices were firm, however, at 5.375 cents in both fields.

Fuel oil was exceedingly scarce, traders reported, and prices in the lower field advanced 0.125 cent over the previous week and sales of 36-40 fuel oil in the upper field were most frequent at the high of the price range.

Steam refined stocks were plentiful, but inter refinery trading was close to quotations to jobbers.

Bright stocks remained firm at 16 cents for 25 pour test, No. 8 color, with some sellers holding for 17 cents per gallon.

Pennsylvania Refinery Lubricating Oil Inventory

(Issued by National Petroleum Assoc.)

	Oct. 7 Gallons	Oct. 14 Gallons	Oct. 21 Gallons
1. **Raw Long Residuum** (including all raw long residuum below, and not salable, as 600 fire)	1,158,433	1,197,736	1,084,053
2. **600 Steam Refined** (includes all steam refined stock commonly sold or used as 600 and as raw material for bright stocks)	10,614,777	10,975,571	10,413,562
3. **Other Steam Refined** (not included in 1 and 2, above)	3,852,482	4,198,645	4,532,770
4. **Finished Dewaxed Long Residuum**	2,688,570	2,877,584	2,823,956
5. **Bright Stock** (does not include any material reported in 4, above	15,715,339	15,113,170	14,757,074
6. **Viscous Neutral,** below 180 vis. but not below 142 vis. @ 100	7,261,841	7,639,921	8,505,710
7. **Viscous Neutral,** 180 vis. @ 100 and above	8,486,757	8,575,898	8,261,494

Wax

Scale Dull

NEW YORK, Oct. 29.—Demand for crude scale wax was reported dull during the past week. General market conditions were reported unchanged from those in the previous week. Foreign buyers were said to be taking little interest in the market, but on the other hand, suppliers were reported not offering much wax for prompt shipment.

Quotations on 124-126 white crude scale generally ranged from 2.85 to 2.95 cents a pound at New York during the week.

Demand for fully refined wax was reported steady. Quotations remained without change, traders said.

Cuts Bunker Oil

NEW YORK, Nov. 2.—Standard Oil Co. of New Jersey, effective Nov. 1, reduced spot market prices for Bunker C fuel oil for ships' bunkers, 10 cents per barrel. New prices at most North Atlantic ports will be $1.25 per barrel.

Socony Cuts Gasoline

NEW YORK, Nov. 2.—Socony-Vacuum Oil Co., Inc., effective Nov. 2, reduced consumer tank car and dealer tank wagon prices of all grades of motor gasolines 0.5 cent per gallon through New York state and New England.

Exceptions to the dealer tank wagon reduction are: Unchanged, eastern Massachusetts, including Boston; Springfield, Mass.; several cities in Maine, including Bangor, Waterville and Lewiston; Bridgeport, Conn.; Syracuse, Buffalo and vicinities, and New York City and vicinity.

Other general gasoline changes this year in this territory have been: Feb. 5, up 0.5 cent; Apr. 1, up 0.5 cent in northeastern New York and New England; and June 11, dealer prices revised downward in parts of New England.

Sohio Revises Prices

CLEVELAND, Nov. 2.—Effective Nov. 2, Standard Oil Co. of Ohio posted a tank wagon price to commercial consumers through Geauga county, at 15.5 cents per gallon for X-70, its regular grade of gasoline and at 15 cents for Renown, its third grade gasoline. It also added to its Q.D.A. commercial tank wagon policy, a 1 cent per gallon additional discount on purchases of 20,000 gallons or over, per month, at the end of the month if earned, in this county.

SEABOARD MARKETS, EXPORT AND COASTWISE

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). In cargo markets, spot shipment is 90 days. Prices in cents per gallon, except heavy fuel oil in dollars per barrel, in tank car lots, f.o.b. refineries or seaboard terminals in districts designated, unless otherwise noted. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

Eastern Domestic

(Inter-refinery and export prices not included.)

MOTOR GASOLINE

Prices Effective	Nov. 1	
District:	*60-64 Oct.	*65 Oct. & Above
N. Y. harbor	7.25 – 7.75	7.50 – 8.00
†N. Y. harbor	7.00 – 7.25	7.25 – 7.50
Philadelphia	7.25	7.50
Baltimore	7.25 – 7.50	7.50 – 7.75
Norfolk	7.25 – 7.50	7.50 – 7.75
Wilmington, N. C.	7.25 – 7.50	7.50 – 7.75
Charleston, S. C.	7.25 – 7.50	7.50 – 7.75
Savannah	7.25	7.50
Jacksonville	7.25	7.50
Portland	7.75	8.00
Boston	7.25 – 7.50	7.50 – 7.75
Providence	7.25 – 7.50	7.50 – 7.75

*Prices are nominal. †Barge lots.

WATER WHITE KEROSINE

District:			
N. Y. harbor	6.25–6.30	Charleston, S. C.	6.25
*N. Y. harbor	6.125–6.18	Savannah	5.75
Philadelphia	6.25	Jacksonville	5.75
Baltimore	6.25	Portland	6.75
Norfolk	6.25	Boston	6.40
Wilmington, N. C.	6.25	Providence	6.40

*Barge lots.

†FUEL OILS

	N. Y. harb.	N. Y. harb. barges
No. 1	6.25 – 6.30	6.125– 6.18
Nos. 2-3	5.25	5.125
No. 4	5.25	5.00 – 5.125
No. 5	$1.55 –$1.60	.....
No. 6	$1.35	.....

	Phila. dist.	Balt. dist.
No. 1	6.25	6.25
Nos. 2-3	5.25	5.25
No. 4	4.75 – 5.25	5.25
No. 5	$1.475	$1.55
No. 6	$1.30	$1.35

	Bost. dist.	Prov. dist.
No. 1	6.40	6.40
Nos. 2-3	5.40	5.40
No. 4	5.40	5.40
No. 5	$1.55 –$1.60	.....
No. 6	$1.35	.....

†Fuel oils meet specifications of U. S. Commercial Standards CS12-35.

District:	†Bunker C Fuel	†Diesel Oil
N. Y. harbor	***$1.35	**$2.20
Philadelphia	***$1.30	***$2.20
Baltimore	***$1.35	**$2.20
Norfolk	*$1.35	$2.20
Charleston	$1.30	$2.20
Savannah	*$1.30	$2.20
Jacksonville	*$1.30	$2.20
Tampa	*$1.30	$2.20
Portland	$1.45	$2.35
Boston	***$1.35	**$2.25
Providence	$1.35	$2.25

†In ships' bunkers.
*For barging add 5c per bbl.
**For barging add 6.5c to 7.5c per bbl.
***For barging add 5c to 6c per bbl.

	Gas Oil 28-34 Gravity	Diesel Oil Shore Plants
N. Y. harbor	5.25	5.25
Philadelphia dist.	5.00	....
Baltimore dist.	5.25	....
Norfolk dist.	5.25	....
Savannah dist.	....	5.25
Jacksonville dist.	....	5.25

Pacific Export

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gal., except where otherwise noted.)

Prices Effective	Nov. 1	Oct. 25
U. S. Motor, under 65 oct.	6.00 – 6.125	6.00 – 6.25
400 e.p. blend 65 oct. & above	6.125– 6.375	6.25 – 6.50
*38-40 w.w. kerosine	4.75 – 5.00	4.75 – 5.00
41-43 w.w. kerosine	5.00 – 5.50	5.00 – 5.50
44 w.w. kerosine	5.50 – 5.75	5.50 – 5.75

*150 fire point.

Prices Effective	Nov. 1	Oct. 25
In Cargo lots, per bbl.		
Diesel fuel, 24° & above	$1.45 –$1.50	$1.45 –$1.50
Diesel fuel, under 24°	$1.40 –$1.45	$1.40 –$1.45
*30-34 diesel (gas oil)	$1.55 –$1.65	$1.55 –$1.65
†Grade C fuel oil	$0.90	$0.90 –$0.95

Note: For San Francisco cargo prices, add 5c per bbl. to above cargo prices.

In Ships' Bunkers, or deep tank lots, per bbl.:

*Diesel fuel oil	$1.625–$1.65	$1.625–$1.65
†Grade C fuel oil	$1.075–$1.10	$1.075–$1.10

*Pacific specification 200. †Pacific specification 400.

Cased Goods: (Per case)

U. S. Motor	$1.45 –$1.575	$1.45 –$1.575
400 e.p. blend, 65 oct. & above	$1.55 –$1.675	$1.55 –$1.675
*40-43 w.w. kerosine	$1.25 –$1.325	$1.25 –$1.325
Kerosine, p.w.	$1.20 –$1.30	$1.20 –$1.30

*150 fire point.

New York Export

(Prices in cents per gal. in bbls. F.a.s. New York)

CYLINDER OILS (Pennsylvania Products)

Bright stock:		
Light, 25 p.t.	23.50 –24.00	23.50 –24.00
Dark, 25 p.t.	23.00 –23.50	23.00 –23.50
Neutral oil:		
200 3 color, 25 p.t.	30.00 –30.50	30.00 –30.50
150 3 color, 25 p.t.	25.50 –26.00	25.50 –26.00
600 Warren E filtered	21.50 –22.00	21.50 –22.00
600 s.r., unfiltered	16.50 –17.00	16.50 –17.00
650 s.r., unfiltered	21.00 –21.50	21.00 –21.50
600 fl., s.r.	21.50 –22.00	21.50 –22.00
630 fl., s.r.	25.50 –26.00	25.50 –26.00

Wax, Domestic *and* Export

(Prices in cents per lb. Tests made by A. S. T. M. methods. Melting points shown below, however, are A. M. P., 3° higher than A. S. T. M. (E. M. P.) melting points. Export prices are f.a.s. carload lots. Domestic prices are f.o.b. refineries in New York and New Orleans districts, in bags, carload lots, with 0.2c discount allowed for shipment in bulk. Scale, solid and fully refined, slabs in bags.)

Prices Effective	Nov. 1	
	New York	
	Domestic	Export
124-6 Y.C. scale	2.80 – 2.85	2.80 – 2.85
122-4 W.C. scale	2.85 – 2.95	2.85 – 2.95
124-6 W.C. scale	2.85 – 2.95	2.85 – 2.95
123-5 Fully rfd.	4.45	4.375
125-7 Fully rfd.	4.55	4.50
128-30 Fully rfd.	4.80	4.75
130-2 Fully rfd.	5.05	5.00
133-5 Fully rfd.	†5.50	5.50
135-7 Fully rfd.	†5.75	5.75
	New Orleans	
	Domestic	Export
124-6 Y.C. scale	2.80 – 2.85	2.80 – 2.85
122-4 W.C. scale	2.90 – 2.95	2.90 – 2.95
124-6 W.C. scale	2.90 – 2.95	2.90 – 2.95
123-5 Fully rfd.	4.45	4.375
125-7 Fully rfd.	4.55	4.50
128-30 Fully rfd.	4.80	4.75
130-2 Fully rfd.	5.05	5.00
133-5 Fully rfd.	†5.50	5.50

†Shipment either in bags or in bulk.

Gulf Coast

(Prices are f.o.b. ship at Gulf oil terminals representing opinions of traders, except prices specified to the contrary. Prices cover bulk shipments of 20,000 bbls. or more, unless otherwise noted.)

Prices Effective	Nov. 1	Oct. 25
For Domestic shipment:		
MOTOR GASOLINE		
59 oct. & below	*5.75 – 5.875	*5.875
60-64 oct. number	*5.875– 6.00	*6.00
65 oct. & above	6.125– 6.25	6.25
FUEL OILS		
No. 1	5.25 – 5.375	5.25 – 5.375
No. 2	4.50 – 4.625	4.50 – 4.625
No. 4	4.375– 4.50	4.375– 4.50
KEROSINE		
41-43 w.w.	5.25 – 5.375	5.25 – 5.375
For Export Shipment:		
GASOLINE		
U. S. Motor	5.75 – 5.875	5.875
60-62, 400 e.p.	5.875– 6.00	6.00
61-63, 390 e.p.	5.875– 6.00	6.00
64-66, 375 e.p.	6.00 – 6.125	6.125

*Nominal.

Prices Effective	Nov. 1	Oct. 25
KEROSINE		
44 w.w.	*5.625	*5.625
41-43 w.w.	5.25 – 5.375	5.25 – 5.375
41-43 p.w.	5.125– 5.25	5.125– 5.25
GAS AND BUNKER OILS		
For Domestic and/or Export Shipment		
‡26-30 translucent gas oil	4.375– 4.50	4.375– 4.50
‡30 plus translucent gas oil	4.50 – 4.625	4.50 – 4.625
‡30 plus transparent gas oil	4.50 – 4.625	4.50 – 4.625
Diesel Oil Ship's bkrs.	†$1.90	†$1.90
Grade C bunker oil, for ship's bunkers	†$1.05	†$1.05
Grade C bunker oil, in cargoes	$0.85	$0.85

‡Less than ½ of 1% sulphur. †Barging 5c bbl. additional at some Gulf ports.

MEXICAN CRUDE AND BUNKER OILS

(F.o.b. Steamer, Tampico)

Heavy Panuco crude, taxes to be paid	*$0.96	*$1.00
Grade C bunker oil, ship's bunkers, taxes paid	$1.05	$1.05

MID-CONTINENT LUBRICATING OILS

(Prices in cents per gal. in bbls. f.a.s. Gulf oil terminals. In drums and new barrels, 0.5c to 1c higher per gal. in some instances.)

190-200 vis. D 210 brt. stock	25.50	25.50
150-160 vis. D 210 brt. stock:		
0-10 p.p.	22.50	22.50
10-25 p.p.	21.50	21.50
25-40 p.p.	21.50	21.50
150-160 vis. E 210 brt. stock	21.50	21.50
120 vis. D 210 brt. stock	20.50	20.50
180 vis. No. 3 color neutral:		
0-10 p.p.	16.50	16.50
15-30 p.p.	16.00	16.00
200 vis. No. 3 color neutral:		
0-10 p.p.	17.00	17.00
15-30 p.p.	16.50	16.50
600 s.r. olive green	12.50	12.50
600 s.r. dark green	10.50	10.50
631 s.r.	20.50	20.50

SOUTH TEXAS LUBRICATING OILS

(Vis. at 100° F., pour point 0. Tanker, f.o.b. Gulf oil terminals, for export shipment.)

Unfiltered Pale Oils:		
Vis. Color		
100 No. 3	5.50 – 5.75	5.50 – 5.75
200 No. 3	7.25 – 7.50	7.25 – 7.50
300 No. 3	7.75 – 8.00	7.75 – 8.00
500 No. 3½	8.75 – 9.00	8.75 – 9.00
750 No. 4	9.25 – 9.50	9.25 – 9.50
1200 No. 4	9.75 –10.00	9.75 –10.00
2000 No. 4	10.25 –10.50	10.25 –10.50
Red Oils:		
Vis. Color		
100 No. 5-6	5.50 – 5.75	5.50 – 5.75
200 No. 5-6	7.25 – 7.50	7.25 – 7.50
300 No. 5-6	7.75 – 8.00	7.75 – 8.00
500 No. 5-6	8.75 – 9.00	8.75 – 9.00
750 No. 5-6	9.25 – 9.50	9.25 – 9.50
1200 No. 5-6	9.75 –10.00	9.75 –10.00
2000 No. 5-6	10.25 –10.50	10.25 –10.50

Note: Red oil prices shown above cover oils with green cast; prices for blue cast red oils are slightly lower in some cases.

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 lbs., British sterling; to U. S. ports in cents per bbl.)

Rates Effective Nov. 1

	Crude &/or Fuel		Refined Oil &/or Spirits	
	Last Paid	Owners Ask	Last Paid	Owners Ask
Gulf-U.K./Cont.‡	23/6	24/-25/	24/	25/-26/
Aruba-U.K./Cont.‡	21/	21/6-22/	21/6	22/-23/
Gulf-N. Atlantic** (not E. of N. Y.):				
Hvy. Crude & Fuel, (10 to 19.9 gravity)	30c	30c	....	....
Light Crude, (30 Grav. or Lighter)	....	26c-27c	....	....
Gasoline	....	....	....	27c-28c
Kerosine	....	....	*23c	28c-29c
Light Fuel	....	....	....	29c-30c

Note: Dirty boat quotations are enlarged to cover, "Fuel and Light Crude" quotations.

‡Continental ports in range between Bordeaux and Hamburg, both inclusive.

**Venezuela loading same rate; Tampico 2c to 3c per bbl. additional.

*Spot boat.

CRUDE OIL MARKETS

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I. gravity. Prices are effective as of 7 a. m. of dates as given

EASTERN FIELDS

Posted by Joseph Seep Purchasing Agency

(Effective Oct. 12, 1937, except Corning Sept. 2, 1937)

Penna Grade Oil in Southwest Penna. Pipe Lines.....$2.05
Penna. Grade Oil in Eureka Pipe Lines (West Virginia).....$2.00
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.).....$1.85
Corning Oil in Buckeye Pipe Lines (Ohio)...$1.27

Posted by Other Companies

Tide Water Pipe Co., Ltd.
Bradford-Allegany district (Penna. and N. Y.) (Effective Oct. 12, 1937).....$2.35
*The Pennzoil Co.: (Effective Oct. 12, 1937)
Penna. Grade Oil in National Transit Lines*$2.35
Ashland Oil & Transportation Co.:
Somerset Oil in Ashland Lines (Ky.):
(Effective Jan. 28, 1937)
Big Sandy River.....$1.42
Kentucky River.....$1.50

*The Pennzoil Co. posts $2.35 in Cochran, Franklin, Hamilton and Doolittle, Pa. fields; prices in other lower districts range down to $2.30 per bbl. at well.

MICHIGAN

Posted by Pure Oil Co.

Midland, Midland County (July 23, 1937)...$1.27

Posted by Simrall Pipe Line Corp.

(Effective July 22, 1937)
West Branch, Arenac, and equal grades.....$1.09
(Effective July 23, 1937)
Beaverton, Crystal, Greendale, Porter and equal grades.....$1.27
Buckeye.....$1.245
(Effective July 1, 1937)
Billings and Tobacco.....$1.395

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.

(Effective Jan. 28, 1937)
Illinois, Princeton.....$1.35
Lima.....$1.25
Owensboro (Western Ky.).....$1.40

Posted by Stoll Oil Refining Co.

(Effective Feb. 1, 1937)
Stoll Pipe Line Oil (Ky.).....$1.40

CANADIAN FIELDS

Posted by Imperial Oil Limited

Western Ontario

(Effective Sept. 9, 1933)
Petrolia.....$2.10
Oil Springs.....$2.17

Alberta—Turner Valley

(Prices f.o.b. field tankage)
(Effective Sept. 1, 1937)
Clear Naphtha, 65 grav. & above.....$2.36

Crude Oil & Discolored Naphtha

40-40.9°	$1.36	53-53.9	$1.62
41-41.9	1.38	54-54.9	1.64
42-42.9	1.40	55-55.9	1.66
43-43.9	1.42	56-56.9	1.68
44-44.9	1.44	57-57.9	1.70
45-45.9	1.46	58-58.9	1.72
46-46.9	1.48	59-59.9	1.74
47-47.9	1.50	60-60.9	1.76
48-48.9	1.52	61-61.9	1.78
49-49.9	1.54	62-62.9	1.80
50-50.9	1.56	63-63.9	1.82
51-51.9	1.58	64-64.9	1.84
52-52.9	1.60	65° & higher, for discolored naphtha only	2.36

Note: Clear naphtha: 22 color; 10 lbs. vapor pressure, Reid method; 90% recovery; end point, 410°. Discolored naphtha: same specifications as for clear naphtha except color.

MID-CONTINENT

Posted by Stanolind Crude Oil Purchasing Co., Jan. 28, 1937

	(In Oklahoma-Kansas*	(In North-North Central Texas)
Below 29	$1.06	$0.96
29-29.9	1.08	0.98
30-30.9	1.10	1.00
31-31.9	1.12	1.02
32-32.9	1.14	1.04
33-33.9	1.16	1.06
34-34.9	1.18	1.08
35-35.9	1.20	1.10
36-36.9	1.22	1.12
37-37.9	1.24	1.14
38-38.9	1.26	1.16
39-39.9	1.28	1.18
40 & above	1.30	1.20

Above Stanolind prices met as follows:

Jan. 28, Continental Oil Co. met in Okla., Kans., and North Texas. Sinclair-Prairie met in North Texas and North Central Texas, Jan. 28, Stanolind's North Texas schedule. Same date, The Texas Co. met in North-North Central Texas.

Note: Stanolind prices in Okla.-Kans. are for quantities computed by 97% tank tables. In Texas, 100% tank tables are used effective Oct. 1, 1937, volume corrected to 60° F., and deduction for full b.s. & w. content.

*Effective Aug. 1, 1937, for Otis-Albert pools Rush-Barton counties, Kans., 13c less.

Posted by Carter Oil Co.

In Oklahoma

(Effective Jan. 28, 1937)

Below 25	$0.98	33-33.9	$1.16
25-25.9	1.00	34-34.9	1.18
26-26.9	1.02	35-35.9	1.20
27-27.9	1.04	36-36.9	1.22
28-28.9	1.06	37-37.9	1.24
29-29.9	1.08	38-38.9	1.26
30-30.9	1.10	39-39.9	1.28
31-31.9	1.12	40 and above	1.30
32-32.9	1.14		

Above Carter schedule met Jan. 28 by the following companies: Sinclair-Prairie, Shell and Barnsdall in Oklahoma-Kansas; Skelly Oil in Kansas; Tide Water in Oklahoma; Pure Oil in Oklahoma-Kansas, beginning with below 24 at $0.98 and ending with 40 & above at $1.30.

Posted by Magnolia Petroleum Co.

(Effective Jan. 28, 1937)

In Oklahoma, same schedule as Carter Oil, which see above, beginning with below 25, at $0.98 and ending with 40 & above, at $1.30.

In Texas: North and North Central, including Burkburnett, Archer, Henrietta, Electra, Comanche and Olden, same gravity and price schedule as Stanolind in North Texas, which see under Stanolind, beginning with below 29 at $0.96 and ending with 40 and above, at $1.20.

Beaumont, Tex.

(Effective Oct. 1, 1937)

Below 21°	$0.95	27-27.9	$1.15
21-21.9	0.98	28-28.9	1.17
22-22.9	1.01	29-29.9	1.19
23-23.9	1.04	30-30.9	1.21
24-24.9	1.07	31-31.9	1.23
25-25.9	1.10	32-32.9	1.25
26-26.9	1.13	33-33.9	1.27
		34 & above	1.29

TEXAS FIELDS

Posted by Humble Oil & Refining Co.

(*West Central Texas)

(Effective Jan. 28, 1937)

Below 29	$0.96	35-35.9	$1.10
29-29.9	0.98	36-36.9	1.12
30-30.9	1.00	37-37.9	1.14
31-31.9	1.02	38-38.9	1.16
32-32.9	1.04	39-39.9	1.18
33-33.9	1.06	40 and above	1.20
34-34.9	1.08		

*Includes Brown, Callahan, Coleman, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, Throckmorton and Young counties.

Shell Petroleum Corp., effective Jan. 28, posts Humble's above schedule on Fisher county crude, plus these five lower grades, beginning with below 25 gravity at $0.88; 25-25.9, $0.90; 26-26.9, $0.92; 27-27.9, $0.94, and 28-28.9, $0.96; rest of schedule same as Humble's in West Central Texas.

Note: Effective Oct. 1, 1937, Humble prices are based on 100% tank tables at 60F.

*East Central Texas

(Effective Jan. 28, 1937)

Below 29	$1.03	35-35.9	$1.17
29-29.9	1.05	36-36.9	1.19
30-30.9	1.07	37-37.9	1.21
31-31.9	1.09	38-38.9	1.23
32-32.9	1.11	39-39.9	1.25
33-33.9	1.13	40 and above	1.27
34-34.9	1.15		

*Including Anderson, Cherokee, Limestone, Navarro counties.

Same date, Sinclair-Prairie met in Mexia Humble's above schedule.

PANHANDLE TEXAS

Posted by Humble Oil & Refining Co.

(Effective Jan. 28, 1937)

	Gray County	Carson-Hutchinson
Below 35	$0.96	$0.91
35-35.9	0.98	0.93
36-36.9	1.00	0.95
37-37.9	1.02	0.97
38-38.9	1.04	0.99
39-39.9	1.06	1.01
40 & above	1.08	1.03

Jan. 28, above prices met by Sinclair-Prairie and Magnolia in the entire area and by Continental in Carson-Hutchinson and by Texas Co. in Panhandle Sweet, same as Humble's Gray Co. and on Panhandle Sour, same as Carson-Hutchinson.

EAST TEXAS

(Effective May 22, 1937)
Stanolind, Humble, Shell, Sinclair-Prairie, Texas Co., and Magnolia.....$1.35

Shell also posted on Jan. 28, in Livingston area, Polk County, Texas, $1.27.

NORTHEAST TEXAS

(Posted by Humble, Jan. 28, 1937)

Talco.....$0.73

(Posted by Magnolia, Jan. 28, 1937)

Cass County and Panola County, Tex:
Same gravity and price schedule as S. O. Louisiana posts for Rodessa, La., which see under that company.

(Posted by The Texas Co., Jan. 28, 1937)

Cass County.....$1.25

WEST TEXAS AND NEW MEXICO

Posted by Humble Oil & Refining Co.

(Effective Jan. 28, 1937)

(Including Andrews, Crane, Crockett, Ector, Glasscock, Howard, Winkler and Upton Counties, Texas and Lea county, New Mexico).

Below 26	$0.78	33-33.9	$0.94
26-26.9	0.80	34-34.9	0.96
27-27.9	0.82	35-35.9	0.98
28-28.9	0.84	36-36.9	1.00
29-29.9	0.86	37-37.9	1.02
30-30.9	0.88	38-38.9	1.04
31-31.9	0.90	39-39.9	1.06
32-32.9	0.92	40 & above	1.08
Pecos, West Texas			$0.91

Jan. 28, Magnolia met Humble in Crane, Upton, Howard, Glasscock, Mitchell and Winker.

Shell Petroleum Corp., on Jan. 28, met Humble in Crane, Glasscock, Howard, Pecos (except Yates shallow pool), Winkler, and Upton counties, Tex., and in Lea County, N. Mex. On Jan. 28, Shell posted in Yates shallow pool in Pecos county, Tex., $0.81. June 4, 1937, Shell added Ector county to West Texas postings.

Jan. 28, Stanolind Oil & Gas Co. met Humble in Hendrick field, Winkler county.

Jan. 28, Texas Co. met Humble in Ward and Winkler counties, Tex., and Lea County, N. M.

April 20, 1937, Sinclair Prairie met Humble in Ward and Winkler, Tex. and Lea, N. M., counties, except that its gravity schedule ends with 36 and above, at $1.00.

Posted by Continental Oil Co.

(Effective Jan. 28, 1937)

Artesia, Jackson and Maljamar pools, N. M...$0.90

COLORADO

(Posted by Continental Oil Co.,
Effective Jan. 28, 1937)

Ft. Collins and Wellington

Below 29	$1.01	35-35.9	$1.15
29-29.9	1.03	36-36.9	1.17
30-30.9	1.05	37-37.9	1.19
31-31.9	1.07	38-38.9	1.21
32-32.9	1.09	39-39.9	1.23
33-33.9	1.11	40 & above	1.25
34-34.9	1.13		

Cannon City and Florence, Col.....$1.10

SOUTH AND SOUTHWEST TEXAS

Posted by Humble Oil & Refining Co.

(Effective Jan. 28, 1937)

Carroll, Clark, Darst Creek, Hilbig, Salt Flat and Zoboroski fields.....$1.09

Pettus	$1.37	Van Zandt	$1.10

(Effective Nov. 1, 1936)

Heyser heavy	$0.90	Placedo heavy	$0.90
Heyser light	1.15	Taft	0.95

Shell Pet. Corp. on Jan. 28, posted $1.09 in Salt Flat district, Tex.

Anahuac, Dickinson, Flour Bluff and Turtlebay
(Effective Jan. 28, 1937)

Below 31	$1.16	36-36.9	$1.28
31-31.9	1.18	37-37.9	1.30
32-32.9	1.20	38-38.9	1.32
33-33.9	1.22	39-39.9	1.34
34-34.9	1.24	40 and above	1.36
35-35.9	1.26		

Jan. 28, Magnolia met Humble in Darst Creek; posted $1.00 in Luling; $1.12 in Lytton Springs; $1.27 for Cleveland, Liberty county, Tex.; $1.15 in Hardin, Liberty county, Tex.

Jan. 28, 1937, The Texas Co. met Humble in Darst Creek.

Posted by Humble

Conroe, Raccoon Bend, Tomball and Satsuma
(Deep sand crudes)
(Effective Jan. 28, 1937)

Below 29	$1.20	35-35.9	$1.34
29-29.9	1.22	36-36.9	1.36
30-30.9	1.24	37-37.9	1.38
31-31.9	1.26	38-38.9	1.40
32-32.9	1.28	39-39.9	1.42
33-33.9	1.30	40 & above	1.44
34-34.9	1.32		

Jan. 28, Magnolia met Humble in Tomball and Texas Co. met Humble in Conroe, beginning with 35-35.9 gravity.

Posted by Humble

Mirando, Heavy and Light
(Effective July 6, 1937)

Below 21	$0.96	31-31.9	$1.18
21-21.9	0.98	32-32.9	1.20
22-22.9	1.00	33-33.9	1.22
23-23.9	1.02	34-34.9	1.24
24-24.9	1.04	35-35.9	1.26
25-25.9	1.06	36-36.9	1.28
26-26.9	1.08	37-37.9	1.30
27-27.9	1.10	38-38.9	1.32
28-28.9	1.12	39-39.9	1.34
29-29.9	1.14	40 & above	1.36
30-30.9	1.16		

July 6, Magnolia posted same schedule as Humble in Mirando.

July 6, 1937, Texas Co. posted for Duval-Mirando, $0.96 for below 21, plus 2c differential, to $1.12 for 28 & above.

(Continued on next page)

CRUDE OIL MARKETS

(Continued from preceding page)

NORTH LOUISIANA-ARKANSAS

Posted by Standard Oil Co. of Louisiana

(Effective Jan. 28, 1937)

(In Caddo, Homer, Haynesville, Sabine, De Soto, Sarepta, Carterville, El Dorado, Bunkie, and Miller county).

Below 25	**$0.90**	**33-33.9**	**$1.08**
25-25.9	**0.92**	**34-34.9**	**1.10**
26-26.9	**0.94**	**35-35.9**	**1.12**
27-27.9	**0.96**	**36-36.9**	**1.14**
28-28.9	**0.98**	**37-37.9**	**1.16**
29-29.9	**1.00**	**38-38.9**	**1.18**
30-30.9	**1.02**	**39-39.9**	**1.20**
31-31.9	**1.04**	**40 and above**	**1.22**
32-32.9	**1.06**		

Rodessa, La.

(Effective Jan. 28, 1937)

Below 25	$0.93	33-33.9	$1.11
25-25.9	0.95	34-34.9	1.13
26-26.9	0.97	35-35.9	1.15
27-27.9	0.99	36-36.9	1.17
28-28.9	1.01	37-37.9	1.19
29-29.9	1.03	38-38.9	1.21
30-30.9	1.05	39-39.9	1.23
31-31.9	1.07	40 and above	1.25
32-32.9	1.09		

Choctaw and Darrow

Jan. 28, 1937, initial posting; same schedule as Humble posts in Mirando, Tex., which see.

Smackover, Ark. $0.90
Urania, La. (La. Oil Refg. Co., Jan. 10, '36) ... 0.97
Tepetate, La. (Continental Oil, Jan. 28, '37) ... 1.24

Jan. 28, 1937, Magnolia met S. O. La.'s No. La.-Ark. gravity and price schedule in Pine Island, Haynesville, Bull Bayou and Cotton Valley, La., and in Eldorado and Rainbow districts, Ark.; and met S. O. La.'s Rodessa prices; and in Lockport, Iowa, Cameron Meadow, La., posted Humble's gravity and price schedule on Mirando.

Jan. 28, The Texas Co. met S. O. La. in N. La., except that its gravity schedule begins with below 27 at $0.94. It posted $1.37 for Garden Island, La., $1.24 for LaFitte, La. and $0.90 for Smackover.

*GULF COASTAL FIELDS

Posted by Humble Oil & Refining Co. and The Texas Co.

	(Effective Jan. 28, 1937) Humble	Texas	Saxet (Humble) (July 6 '37)
Below 18	$0.95	$0.90	....
18-18.9	for	0.92	....
19-19.9	below	0.94	....
20-20.9	21°	0.96	$1.01
21-21.9	0.98	0.98	1.03
22-22.9	1.01	1.01	1.05
23-23.9	1.04	1.04	1.07
24-24.9	1.07	1.07	1.09
25-25.9	1.10	1.10	1.11
26-26.9	1.13	1.13	1.13
27-27.9	1.15	1.15	1.15
28-28.9	1.17	1.17	1.17
29-29.9	1.19	1.19	1.19
30-30.9	1.21	1.21	1.21
31-31.9	1.23	1.23	1.23
32-32.9	1.25	1.25	1.25
33-33.9	1.27	1.27	1.27
34-34.9	1.29	1.29	1.29
35-35.9	1.31	for	1.31
36-36.9	1.33	oil	1.33
37-37.9	1.35	34°	1.35
38-38.9	1.37	and	1.37
39-39.9	1.39	above.	1.39
40 and above	1.41	....	1.41

Effective Dec. 1, 1934, Humble prices are based on 99% tank tables at 60F. Allowance or deduction of 1% is made for each 25° change in temperature above or below 60F

*Humble's prices apply in these fields: Barbers Hill, Goose Creek, Hull, Humble, Liberty, Moss Bluff, Mykawa, Orange, Pierce Junction, Plymouth, Rabbs Ridge, Raccoon Bend (shallow sand), Refugio light and †heavy, Sour Lake, Spindletop, Sugarland and West Columbia. †Except these grades of Refugio heavy: effective July 6, 1937: Below 20, $0.95; 20-20.9, $1.01; 21-21.9, $1.03; 22-22.9, $1.05; 23-23.9, $1.07; 24-24.9, $1.09; and 25-25.9, $1.11; rest of schedule same as other Gulf Coastal crude.

Jan. 28, Sinclair-Prairie met above Humble schedule in full.

July 6, 1937, The Texas Co. posted for Refugio, which includes Greta, Saxet and Taft: $1.01 for below 21, plus 2c differential, to $1.17 for 28 & above.

Texas Co. postings in Gulf Coastal Texas include: Arriola, Five Corners, Ganado, Humble, Liberty, Magnet, Manvel, Markham, Mauritz, Pickett Ridge, Port Neches, Sour Lake, West Columbia and Withers. In Gulf Coastal Louisiana: Bay St. Elaine, Caillou Island, Dog Lake, Four Isle, Gillis, Horseshoe Bayou, Iberia, Lake Barre, Lake Pelto, Leesville and Port Barre.

ROCKY MOUNTAIN FIELDS

Posted by Stanolind Oil & Gas Co.

(Effective Jan. 28, 1937)

Salt Creek, Midway and Dutton Creek, Wyo., same schedule as Stanolind posts in Oklahoma, Kansas which see under Mid-Continent crude on previous page.

Greybull-Torchlight	$1.30
Iles, light, Col.	1.18
Iles, heavy	1.12
Hogback, N. M.	1.33
Big Muddy	1.23
Elk Basin, light	1.30
Grass Creek, light	1.30
Frannie light	0.82

(Effective Nov. 4, 1936)

Grass Creek, heavy	$0.62
Frannie heavy	0.62
Hamilton Dome, Wyo.	0.57

Pondera, Mont., (Postings discontinued July 1, 1936, but Stanolind pays price posted by Ohio Oil for Kevin-Sunburst, less 20c per bbl.)

Posted by Ohio Oil Co

(Effective Jan. 28, 1937)

Elk Basin, Wyo.	$1.30
Grass Creek, light	1.30
Rock Creek	1.205
Lance Creek	0.97
Sunburst, Mont.	1.20

*Posted by *International Refg. Co.*

Cut Bank, Mont.

(Effective Jan. 28, 1937)

Below 35°	$1.34	38-38.9	$1.42
35-35.9	1.36	39-39.9	1.44
36-36.9	1.38	40 and above	1.46
37-37.9	1.40		

*Texas Co. subsidiary.

Posted by Continental Oil Co.

(Effective Jan. 28, 1937)

Cat Creek, Mont.	$1.40
Big Muddy, Wyo.	1.18
Lance Creek, Wyo.	0.97

CALIFORNIA, *Posted by Standard Oil of California*

All gravities above those quoted take highest price offered in the field. Prices effective Feb. 26, 1936, except Huntington Beach, Playa del Rey, Santa Fe Springs, Kern Front, Signal Hill (Long Beach) effective March 7, 1936; Elk Hills effective June 22, 1936; El Segundo and Wilmington, Oct. 15, 1937

Gravity	Signal Hill (Long Beach) El Segundo †Wilmington	Seal Beach	Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda Brea Canon	Athens Rosecrans	Dominguez	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	‡Newhall and others	Mountain View	Elk Hills	Buena Vista Hills **Midway-Sunset	Lakeview Area	Lost Hills	Coalinga	Wheeler Ridge
14-14.9	$0.80	0.79	0.74	0.78	0.79	0.80	0.76	....	....	0.80	0.76	0.76	0.77	0.78	----	0.70	----	0.70	0.70	0.70	0.70	0.70	----
15-15.9	.80	.79	.74	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	----	.70	----	.70	.70	.70	.70	.70	----
16-16.9	.80	.79	.74	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	----	.70	----	.70	.70	.70	.70	.70	----
17-17.9	.80	.79	.74	.78	.81	.80	.76	....	....	.80	.76	.76	.77	.78	----	.70	----	.70	.70	.70	.70	.70	----
18-18.9	.80	.79	.74	.78	.84	.80	.78	....	....	.82	.76	.76	.77	.78	----	.70	..	.70	.70	.70	.70	.70	----
19-19.9	.82	.79	.74	.82	.87	.84	.81	....	....	.85	.76	.78	.77	.78	----	.70	.70	.74	.74	.74	.71	.70	
20-20.9	.85	.79	.74	.85	.90	.88	.84	....	....	.88	.78	.82	.77	.80	----	----	.70	.78	.78	.78	.72	.70	
21-21.9	.88	.79	.74	.89	.93	.93	.88	....	....	.91	.80	.85	.77	.84	.78	----	.78	.82	.82	.82	.74	.70	
22-22.9	.92	.82	.74	.92	.96	.98	.92	..	..	.93	.84	.89	.79	.88	.78	----	.77	.87	.87	.87	.86	.78	.72
23-23.9	.95	.86	.77	.96	.99	1.02	.96	.84	.79	.96	.88	.93	.82	.92	.78	----	.80	.92	.92	.92	.90	.82	.76
24-24.9	.99	.91	.80	1.00	1.02	1.06	.99	.88	.81	.99	.91	.96	.85	.96	.82	----	.84	.97	.97	.97	.94	.86	.79
25-25.9	1.03	.95	.82	1.03	1.05	1.11	1.03	.93	.83	1.02	.95	....	.89	.99	.86	----	.88	1.01	1.01	1.01	.98	.90	.83
26-26.9	1.06	1.00	.85	1.07	1.09	1.16	1.06	.98	.86	1.05	.98	....	.92	1.03	.90	----	.91	1.06	1.06	1.06	1.02	....	----
27-27.9	1.10	1.05	.88	1.11	1.12	....	1.10	1.03	.88	....	1.02	----	.96	1.06	.95	----	.95	1.10	1.10	1.10	1.06	....	----
28-28.9	1.14	1.10	.90	1.14	1.15	....	1.14	1.07	.90	....	1.06	....	.99	1.10	.99	----	.99	1.15	1.15	1.15	1.10	....	----
29-29.9	1.17	1.15	.93	1.18	1.18		1.17	1.12	.93	....	1.09	....	1.03	1.14	1.03	----	1.02	1.20	1.20	1.20	1.14	....	----
30-30.9	1.21	1.19	.95	1.22	1.21		1.21	1.17	.95	....	....	....	1.07	1.17	1.08	----	1.06	1.25	1.25	1.25	1.18	....	----
31-31.9				....	1.24		1.24	1.22	.97	....	....	....	1.11	1.21	1.12	----	1.09	1.29	1.29	1.29			
32-32.9	*Elwood Terrace			....	1.27		1.27	1.27	1.00	....	....	....	1.14	1.25	1.16	----	1.13	1.34	1.34	1.34	Kettleman Hills		
33-33.9	....	1.28	....	....	....		....	1.32	....	....	....	....	1.18	1.28	1.20	----	1.17	1.38	1.38	1.38	....	1.19	----
34-34.9	....	1.32	....	....	....		....	1.37	....	....	....	....	1.22	1.32	1.25	----	1.20	....	....	....	....	1.23	----
35-35.9	....	1.35	....	....	....		....	1.42	....	....	....	....	1.25	....	1.29	----	....	....	....	....	....	1.27	----
36-36.9	....	1.39	....	....	....		....	1.46	....	....	....	....	1.29	....	1.33	----	....	....	....	....	....	1.31	----
37-37.9	....	1.43	....	....	....		....	1.51	....	....	....	....	1.32	....	1.37	----	....	....	....	....	....	1.35	----
38-38.9	....	....	....	....	....		....	1.56	....	....	....	....	1.36	....	1.42	----	....	....	....	....	....	1.39	----
39-39.9	....	....	....	....	....		....	1.61	....	....	....	....	1.40	....	....	----	....	....	....	....	....	1.43	----
40-40.9	....	....	....	....	....		....	1.66	....	....	....	....	1.43	....	....	----	....	....	....	....	....	....	----

F. O. B. Standard Pipe Line

*F. o. b. ship.
‡Also McKittrick, Kern River, Kern Front and Round Mountain $0.70 thru 19.9 gravity; no higher gravity quoted. **Except Lakeview Area. †Wilmington prices differ on gravities below 18.9. Prices are: 14-16.9, $0.75; 17-17.9, $0.77; and 18-18.9, $0.79; rest of schedule same as Signal Hill.

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Ohio Oil Co. 46
Oil Equipment Mfg. Co.

Paraflow Sales Division, S. O. Co. of N. J.
Peerless Electric Co.
Pennsylvania Grade Crude Oil Assn.
Pennsylvania Petroleum Products Co.
Penola, Inc.
Perfection Stove Co.
Philadelphia Valve Co.
Phillips Petroleum Co.
Pittsburgh Equitable Meter Co. 1
Pittsburgh Plate Glass Co.
Pure Oil Co.
Pyroil Co.

Roper, Corp., Geo. D.

Service Station Equipment Co.
Shand & Jurs Co.
Shell
Silent Glow Oil Burner Corp.
Sinclair Refg. Co.
Skelly Oil Co.
Southern Steel Barrel Co. ..... Third Cover
Southwest Grease & Oil Co.
Southwest Pump Co. 5
Standard Oil Co. of N. J.
Standard Steel Works
Stevens Hotel
Sun Oil Co.

Talco Asphalt & Refg. Co. 2
Texaco Development Corp. 29
Thiokol Corp.
Tide Water Associated Oil Co.
Tokheim Oil Tank & Pump Co. ..... Second Cover
Truck Equipment Co.

U. S. Steel Corp.
Universal Oil Products Co. 27

Viking Pump Co.

Wayne Pump Co.
Wheaton Brass Works, A. W.
White Motor Co.
Wilson & Bennett Mfg. Co.
Wood Industries, Inc., Gar
Worthington Pump & Mach'y Corp.

Yale & Towne Mfg. Co.
Youngstown Pressed Steel Co. Division of Mullins Mfg. Corp.

Coming Meetings

Society of Automotive Engineers, Regional Transportation Meeting, Newark, N. J., Nov. 6 to 12.
National Motor Truck Show, Newark, N. J., Nov. 6 to 12.
American Petroleum Institute, 18th annual meeting, Stevens Hotel, Chicago, Ill., Nov. 8 to 12.
American Trucking Assn., Inc., Private Carriers Div., Oil Field Haulers Div., Louisville, Ky., Nov. 15 to 18.
Oil Traders Assn. of New York, New York, Nov. 16.
American Institute of Chemical Engineers, annual meeting, St. Louis, Mo., Nov. 17, 18 and 19.
Virginia Oil Jobbers Assn., John Marshall Hotel, Richmond, Dec. 6.
National Asphalt Conference, Memphis, Tenn., week of Dec. 6.
American Society of Mechanical Engineers, New York, Dec. 6 to 10.
Exposition of Chemical Industries, Grand Central Palace, New York, N. Y., Dec. 6 to 11.
Nebraska Petroleum Marketers, Inc., Omaha, Nebr., Dec. 7, 8 and 9.
Society of Automotive Engineers, National Production Meeting, Hotel Durant, Flint, Mich., Dec. 8, 9 and 10.
American Chemical Society, Division Organic Chemistry, Richmond, Va., Dec. 28, 29 and 30.

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Independent Oil Jobbers Assn. of Okla., Oklahoma City, Okla., Jan. 13.
Northwest Petroleum Assn., North Dakota Division, Minot, N. D., Jan. 24 and 25.
Northwest Petroleum Assn., Minnesota Division, Hotel Radisson, Minneapolis, Jan. 27 and 28.
Kentucky Petroleum Marketers Assn., Brown Hotel, Louisville, Ky., Feb. 7, 8 and 9.
Ohio Petroleum Marketers Assn., annual meeting, Columbus, Ohio, some time in February.
American Society for Testing Materials, Spring Regional Meeting & Group Committee Meetings, Seneca Hotel, Rochester, N. Y., March 7 to 12.
American Assn. of Petroleum Geologists, 23rd annual meeting, Roosevelt Hotel, New Orleans, La., March 16 to 18.
National Petroleum Assn., Cleveland, Ohio, April 13 to 15.
Petroleum Industry Electrical Assn., Rice Hotel, Houston, Texas, April 13, 14 and 15.
American Chemical Society, Dallas, Texas, April 17 to 21.
American Institute of Mining and Metallurgical Engineers, Open Hearth Conference, Buffalo, N. Y., April 20, 21 and 22.
International Petroleum Exposition, Tulsa, Okla., May 14 and 21.

Prussing To Rockford

CHICAGO, Nov. 1. — H. L. Prussing, assistant sales manager for Standard Oil Co. of Indiana at St. Joseph, Mo., was transferred today to agent at Rockford, in the Joliet, Ill., division. Prussing joined the company in 1928. John J. Jost, wholesale sales promoter, Mason City, Iowa, is the new assistant sales manager at St. Joseph.